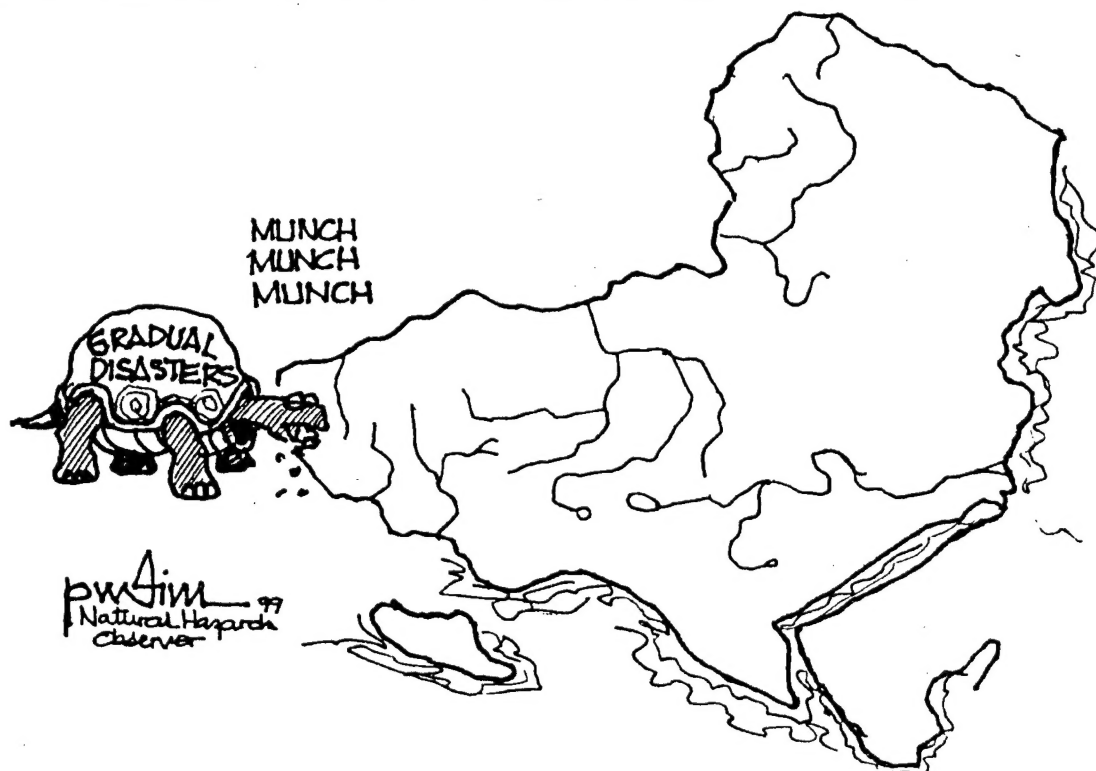


Natural Hazards Observer

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Disaster Awareness and Public Education in Africa The Problems Here Are Different

Because numerous challenges constrain efforts to reduce risks from natural hazards in Africa, success requires a different approach toward hazard reduction than those used in other parts of the world. Public education and awareness opportunities are afforded by focusing on short-, medium-, and long-term risk aversion as a pragmatic and sustainable strategy for minimizing threats.

However, when one reviews the *Bimonthly Highlights* issued by the United Nations International Decade for Natural Disaster Reduction (IDNDR) Secretariat, examples of disaster reduction advocacy from Africa are conspicuously absent, at least compared with the reports of meetings, conferences, Web sites, and publications prolifically generated from Europe, North and South America, Asia, and Oceania. In some respects, this reflects two important points. First, the mainstreaming of disaster reduction—particularly mitigation and preparedness measures taken in

advance of a hazard occurrence—is a gradual process that takes at least 10 to 20 years, as was the case in Latin America and Asia. It takes this time to build sufficient institutional capacity, human resources, and locally applicable technologies to support significant adaptations to expected threats.

Second, much of the initiative in natural disaster reduction has its origins in northern countries or in regions regularly buffeted by sudden-onset threats, such as hurricanes, cyclones, volcanic eruptions, earthquakes, or floods. While much of Africa also faces these types of hazards, the continent's natural risk profile differs considerably—if we define risk as being the product of both hazard and vulnerability.

During the past decade, our continent has been battered by many hardships, including armed conflict and fiscal austerity programs associated with economic reform.

However, most of the natural threats we face are not dramatic sudden-onset events, but relatively silent and insidious encroachments on life and livelihood, which increase social, economic, and environmental vulnerability to even modest hazard occurrences. Recurrent drought, progressive land degradation, desertification, and HIV/AIDS (among other communicable diseases) are responsible for incalculable human, crop, livestock, and environmental losses, which are not easily measured by conventional disaster-loss tracking systems.

The Numbers Don't Tell the (Whole) Tale

Perhaps this is best illustrated by taking a look at the 1997 statistics of natural catastrophes provided by Munich Reinsurance, which estimated a total of 538 disaster loss events in 1997, claiming around 13,000 deaths and \$60 billion in damage. Thirty-six of these events were attributed to Africa (compared with 182 and 172 loss events for Asia and the Americas, respectively).¹ Economic losses for Europe, the Americas, and Asia were respectively estimated at \$10 billion, \$9 billion, and \$8 billion, while total African losses were lower than those recorded for Australia.

These figures primarily reflect insured losses of physical infrastructure in countries where sudden-onset geomorphic, meteorologic, and hydrologic events repeatedly strike areas that are densely populated. As a result, there is a far greater public and institutional awareness of the need for disaster reduction there than in Africa, where small-scale or "creeping emergencies" occur in isolated hinterlands.

The Language of Disasters

Given this context, perhaps the message of "natural disaster reduction" has not worked as well in Africa as in other continents. Again, this focus conjures images of preventing sudden-onset natural events that may or may not happen at some future point. In a region where a ready-made stack of urgent survival issues exists, one can hardly expect natural disaster reduction to be viewed as a priority by the media, educators, or policy makers.

IDNDR Commemorative Volume Now Available

This article is based on a paper in *Natural Disaster Management (NDM)*, the official commemorative volume of the United Nations' International Decade for Natural Disaster Reduction (IDNDR) 1990-2000. *NDM* assesses the achievements of the Decade and analyzes how we may continue to promote hazard preparedness into the 21st century in order to reduce loss of life and property. Comprising more than 100 contributions from experts across 32 countries, *NDM* offers a diverse selection of articles on natural hazard preparedness and disaster mitigation. This book is intended for anyone concerned with the observation, analysis, and interpretation of natural hazards. Copies are now available for £45 (\$70.00) from its UK publishers, *Tudor Rose*, tel: +44 116 251 5123; fax: +44 116 251 7123, WWW: <http://www.ndm.co.uk>.

Moreover, the language of contemporary hazard or disaster reduction does not easily resonate with many of the indigenous southern African languages. Most local languages do not automatically differentiate between the English words of "risk," "hazard," and "disaster" when literally translated. This does not imply that concepts that differentiate between "risk" and "disaster" do not exist in indigenous meaning systems. It does, however, demand greater effort by risk reduction practitioners to build conceptual and perceptual bridges between scientific and indigenous interpretations of risk. Although this seems an obvious prerequisite for effective risk reduction, little effort has been expended in Africa compared to that undertaken in Asia or Latin America.

The natural disaster reduction message also argues that investments in mitigation and preparedness are necessary to ensure sustained economic, social, and environmentally responsible development. Such investments avoid or minimize the unaffordable human, property, and environmental losses caused by the interplay between natural and other forces. Yet, again, particularly in Africa, focusing on future large-scale, quick-onset natural catastrophes overlooks more salient, immediate risks, such as chronic food insecurity and hunger, war, armed robbery, sexual assault, traffic accidents, and the ever-present threats of HIV, tuberculosis, and malaria.

Development and Disasters

If, however, we carry forward the argument that natural disaster reduction in Africa is indeed a cornerstone of sustainable development, then perhaps it would be better to root disaster reduction advocacy in the risks and issues that resonate with today's development agenda, as well as future uncertainties. In many ways, this is a more difficult challenge for both our region's hazard scientists and emergency managers. It means engaging directly with today's social, economic, and environmental agendas, and drawing links between ongoing developmental efforts and natural risk reduction. It means learning the language and vocabulary of fields as diverse as land reform, gender equity, ecotourism, and poverty reduction. It means demystifying and reworking much of our existing meteorological and hydrological hazard science so that it becomes much more accessible to other players and resonates better with today's priorities. The selective integration of risk reduction science and technology with our region's development agendas provides a critical platform for natural disaster reduction advocacy in southern Africa.

Here is one example. Nearly two years ago, southern Africa's largest nongovernmental organization involved in the water sector was invited to participate in a regional drought risk-reduction initiative. "No," they replied, "we are committed to sustainable community water supplies in rural areas, not emergency drought water programmes." Today, the same nongovernmental organization is promoting a regional rainwater harvesting program across southern Africa to improve the sustainability of water supplies to households in recurrently drought-prone areas. Its engagement with drought reduction is not motivated by a concern

for disaster aversion, but rather by a concern that drought threatens the sustainability of rural water supplies.

Integrate and Educate

This is our opportunity. There are multiple avenues to minimize natural disasters by focusing primarily on the links between existing development agendas and natural risk reduction, regardless of whether the perceived threat is violent crime, unemployment, chronic hunger and food insecurity, or progressive land degradation. Our print and electronic media have played active roles in policy advocacy and the promotion of public awareness regarding all these themes, and in most countries there is a high level of political understanding of their importance. Again, the challenge in "getting the message out" about natural disaster reduction is to integrate more skillfully its core elements into these existing advocacy vehicles and networks.

To some degree, the IDNDR has provided Africa with a vehicle that links contemporary hazard science with the agendas of sustainable development and social equity. Irrespective of whether the focus is wetland conservation, improved food security for female-headed households, or

better land-use planning, these are all potential platforms for profiling links between natural and other forms of risk containment. If we take up this challenge, natural risk reduction will become a priority better woven into our existing social, economic, and political fabric, rather than a tenuous thread invoked (albeit temporarily) in the aftermath of a highly visible natural calamity.

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1. Berz, G. "The Role of the Insurance Industry," *IDNDR Press Kit*, 1998 World Disaster Reduction Campaign. 1998.
2. Erbach, J. and J. Gaudet. *Urbanisation Issues and Development in Sub-Saharan Africa*, USAID Africa Bureau, Office of Sustainable Development. Washington, D.C. 1998.

The Internet Strikes Again . . .

End-of-the-Millennium Information Sources

Since 1984, the Natural Hazards Research and Applications Information Center has periodically published a comprehensive list of domestic, academic, governmental, and international institutions that generate information on natural disasters, as well as a list of journals and periodicals dealing with the subject. In each case, these directories provide the names of individuals to contact, with as much contact information as we can divine (address, phone, fax, e-mail, Web site, hat size).

That information is reproduced on the Hazards Center Web site:

<http://www.colorado.edu/hazards>

Specifically, the list of domestic, academic, governmental, and international institutions is available from

<http://www.colorado.edu/hazards/infosource1/infosource1.html>

and the list of periodicals is available from

<http://www.colorado.edu/hazards/infosource2.html>

We have recently completed a thorough update of these indices. However, due to prohibitive costs, we will not be publishing the *Information Sources* in hard copy. Instead we encourage those of you who wish to use these catalogs to print the Web pages listed above. For persons without access to the Web, the Hazards Center will print and mail a complete set; the cost for recipients within the U.S. is \$7.50; for persons overseas, \$12.50. Orders should be directed to the *Publications Clerk, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-6819; fax: (303) 492-2151; e-mail: jclark@spot.colorado.edu.*

We have tried to ensure that these lists are accurate and comprehensive (although we have not included private, for-profit organizations). Still, no doubt we have missed someone somewhere or recorded an erroneous zip code.

Therefore, we encourage *Observer* readers to provide any additions or corrections they may discover. Corrections should be sent to *David Butler, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-4180; fax: (303) 492-2151; e-mail: butler@spot.colorado.edu.*



Nothing so anticipated . . .

. . . since *Star Wars: The Phantom Menace*

A New NHRAIC Monograph on Disaster Evacuation

In 1994, there was *Disaster Evacuation and the Tourist Industry*. In 1996 there was *Disaster Evacuation Behavior: Tourists and Other Transients*. Now comes the final volume in sociologist Tom Drabek's disaster evacuation trilogy: *Disaster-Induced Employee Evacuation* (Monograph #60, 1999, 270 pp.).

Released July 1 by the Natural Hazards Center, *Disaster-Induced Employee Evacuation* asks the fundamental question: When people are at work and they learn that disaster is imminent, what are their responses? To find answers, Drabek interviewed 406 employees of 118 businesses and 23 emergency managers following seven disasters involving hurricanes or floods. He documented employee information sources, judgments, and actions, and, in so doing, discovered that many businesses were ill-prepared to provide the guidance their employees expected or needed. Thus, many employees experienced stress because of inadequate managerial leadership and acute tension because of conflicting demands between work and family. Collectively, Drabek's findings suggest that business owners must make significant investments in disaster preparedness or risk significant costs in both material losses and employee morale and effectiveness.

Not only does Drabek examine numerous dimensions of employee evacuation behavior, he also surveys the effects on that behavior of various event characteristics, organizational size, and organizational mission. He then develops models to explain and predict evacuation behavior and risk perception.

Finally, Drabek identifies specific policy gaps that must be addressed to improve business and employee response to impending disaster and offers suggestions for future research that would both clarify and improve that process. He concludes with an "Action Agenda," in which he calls for employee initiatives to improve business preparedness, employer audits of current practices and resources, and promotion of disaster planning throughout the business community by local emergency managers.

Disaster-Induced Employee Evacuation costs \$20.00, plus postage (indicated in the chart below); copies can be ordered from the Publications Clerk, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-6819; fax: (303) 492-2151; e-mail: jclark@spot.colorado.edu.



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WASHINGTON UPDATE

Emergency Aid Bill Becomes Law

Congress made very little distinction between the follies of humans and the foibles of nature in doling out emergency aid to victims of both the refugee crisis in the Balkans and natural disasters in North and Central America. On May 21, 1999, President Clinton signed into law the 1999 Emergency Supplemental Appropriations Act (P.L. 106-31), which contains \$15 billion to assist Americans in recovering from natural disasters, to aid Central America in its recovery from hurricanes Mitch and Georges, and to finance the air war against Yugoslavia.

Among the many items funded:

- \$41 million for the Agricultural Credit Insurance Fund Program Account to meet needs resulting from natural disasters;



- \$28 million for the Emergency Conservation Program;
- \$3 million for the Livestock Indemnity Program for losses due to natural disasters;
- \$95 million for the Natural Resources Conservation Service to repair damage to waterways and watersheds resulting from natural disasters;

- \$11 million for the Rural Housing Service to meet needs resulting from natural disasters;
- \$46 million for U.S. military forces to undertake relief, rehabilitation, and restoration operations and training activities in response to disasters;
- \$5.6 million for the U.S. Forest Service for damage from Hurricane Georges and other natural disasters in Puerto Rico;
- \$900 million for the Federal Emergency Management Agency (FEMA) for disaster relief for tornado-related damage in Oklahoma, Kansas, Texas, and Tennessee, and \$230 million for disaster relief, buyout assistance, long-term recovery, and mitigation in communities affected by presidentially declared natural disasters during 1998 and 1999;
- \$100 million for the Knutson-Vandenberg fund of the U.S. Forest Service for wildland fire management; and
- \$621 million for the Agency for International Development's Central American and the Caribbean Emergency Disaster Recovery Fund to provide relief to victims of hurricanes Mitch and Georges and the earthquake in Colombia. Of that amount, \$2 million was made available for the clearance of landmines in Nicaragua and Honduras. Congress made an additional \$25 million available for "necessary expenses for international disaster relief, rehabilitation, and reconstruction assistance," as well as \$41 million for debt restructuring in those countries.

The complete text of the legislation, Public Law No. 106-31, can be obtained from any *federal repository library* or via the Internet at <http://thomas.loc.gov>.

FEMA Rules on Cost Share for Disaster Assistance

Sometimes, state and local governments are hard-pressed to come up with their share of matching funds in order to receive federal assistance for a presidentially declared disaster under the Robert T. Stafford Disaster Relief and Emergency Assistance Act. In such cases, state and local governments can apply for cost-share adjustments to reduce the amount they must provide for permanent restorative and emergency work. On April 21, 1999, FEMA issued a final rule that establishes the financial criteria that must be met for the agency to recommend to the president a cost-share adjustment under FEMA's Public Assistance Program.

WASHINGTON UPDATE

The final rule was issued because disasters occasionally place such severe strains on state and local resources that FEMA will recommend a 90% federal/10% state cost-share arrangement, as opposed to the normal 75%/25% requirement. Since 1985, although 435 major disaster declarations have been made under the Stafford Act, only 32 cost-share adjustments have been granted. Since Hurricane Andrew in 1992, no cost-share adjustments above the 90%/10% ratio have been granted, in order to ensure local and state contributions and investment in reducing risk.

In the final rule, FEMA recommends capping the federal share of disaster assistance at 90%, although it still allows discretion by the president to grant 100% funding for emergency work, including direct federal assistance, for limited periods following disaster declarations when emergency needs warrant. In addition, FEMA will consider major disaster declarations for a state during the preceding 12 months, and, if warranted, the agency will recommend 100% federal funding for a limited period, regardless of the per capita impact. This rule applies to sections 403, 406, and 407 of the Stafford Act that relate to permanent restorative work and emergency work. The rule does not apply to the Individual and Family Grant Program, the Hazard Mitigation Program, or to development costs at manufactured home group sites.

Since 1985, FEMA has used a \$64 per capita threshold, based on statewide population, as a trigger for increasing the federal cost-share. The final rule raises this threshold, and FEMA will adjust that threshold annually from now on. Beginning in 1999, this amount is \$75 per capita, and it will be raised to \$85 in 2000 and \$100 in 2001 and 2002. For later years, this amount will be adjusted according to the Consumer Price Index for All Urban Consumers.

The final rule took effect on May 21, 1999. The complete text of the rule can be found in the April 21, 1999, *Federal Register* (Vol. 64, No. 76, pp. 19496-19498). For further information on this policy, contact Patricia Stahlschmidt, Response and Recovery Directorate, FEMA, 500 C Street, S.W., Washington, DC 20472; (202) 646-4066; fax: (202) 646-4060; e-mail: patricia.stahlschmidt@fema.gov.

GAO Looks at Catastrophic Wildfires

Because forests in the American West have accumulated considerable vegetation in recent years, they have suffered an increasing number of large, intense, uncontrollable, and catastrophically destructive wildfires. According to the U.S. Forest Service, 39 million acres of national forests in the interior West are at high risk from catastrophic wildfires due to past management practices, particularly the Forest

Service's decades-old policy of putting out wildfires in national forests. This policy disrupted the natural occurrence of low-intensity fires that removed flammable undergrowth without significantly damaging larger trees. Now, with the accumulation of vegetation, much of the region has been transformed into a tinderbox.

Over the past decade, the number and extent of wildfires has increased, as have the costs of putting them out. During the 1990s, the Forest Service began to address the problems of these wildfires by improving forest health. A recently released General Accounting Office (GAO) report, requested by the Subcommittee on Forests and Forest Health, Committee on Resources, U.S. House of Representatives, looks at these efforts. It is entitled *Western National Forests: A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats* (GAO/RCED-99-65, 1999, 60 pp., free).

In this report, the GAO concluded that the Forest Service lacks adequate data to develop a cohesive strategy for improving forest health. The agency recommends the Forest Service develop a strategy that includes acquiring data to establish meaningful performance measures and goals for fuel reduction, identifying changes in contracting procedures that would facilitate fuel reduction, and developing a schedule and cost estimates for different options for accomplishing these goals.

Copies of the report are free and can be obtained from the U.S. General Accounting Office, P.O. Box 37050; Washington, DC 20013; (202) 512-6000; fax: (202) 512-6061; e-mail: info@www.gao.gov; WWW: <http://www.gao.gov>.

Congress Approves SBA Pilot Program

Congress recently took a step forward in disaster mitigation by funding a Disaster Mitigation Pilot Program for the Small Business Administration (Public Law 106-24). Signed into law on April 27, 1999, the legislation guarantees loans "to enable small businesses to use mitigation techniques in support of a formal mitigation program established by the Federal Emergency Management Agency." It sets aside \$15 million for fiscal years 2000 through 2004, and requires a report on the program's effectiveness be submitted to Congress in 2003.

Copies of the legislation can be obtained from any federal repository library or via the Internet at <http://thomas.loc.gov>. Further information about the program can be obtained from your local Small Business Administration servicing office or via the Internet: <http://www.sba.gov>.

FEMA and APA Issue Planning Guidebook

Wise land use is an effective means of preventing or reducing the impacts of natural disasters. However, immediately following a disaster, there is often pressure on a local government to ease restrictions on building in order to allow the community to return to its previous state as quickly as possible. To help local communities plan for disaster recovery before a disaster happens, the American Planning Association and FEMA have published *Planning for Post-Disaster Recovery and Reconstruction* (PAS Report No. 483/484, 1999, 346 pp., \$34.00). This is the first all-hazards guidance manual for local planners to use in developing postdisaster recovery and reconstruction plans.



The volume looks at the role of planners in postdisaster reconstruction, disaster operations, guiding planning for recovery and reconstruction, the planning process, planning tools, legal and financial issues, and hazard identification and risk assessment. *Planning for Disaster Recovery and Reconstruction* includes several examples of communities that used this process. It notes that disaster recovery measures must be developed before a disaster occurs in order for communities to be successful in competing for federal hazard mitigation grants and other funds that become available following disasters.

The case studies include:

- Arnold, Missouri, which used FEMA hazard mitigation grants and other funds to acquire more than 200 commercial and residential properties for a new greenbelt system following the Great Mississippi Flood of 1993;

- Valmeyer, Illinois, and Pattonsburg, Missouri, which relocated existing businesses following the floods of 1993;
- Soldiers Grove, Wisconsin, which moved the entire town following flooding in 1979;
- Santa Cruz and Watsonville, California, which were severely damaged in the 1989 Loma Prieta earthquake;
- Oakland, California, which suffered severe wildfires in 1991; and
- the Florida Panhandle, which was hit by Hurricane Opal in 1995.

Copies of *Planning for Post-Disaster Recovery and Reconstruction* can be purchased from the *Planners Book Service*, 122 South Michigan Avenue, Suite 1600, Chicago, IL 60603; (312) 786-06344; fax: (312) 431-9985. Copies can also be purchased on-line at <http://www.apa.org/bookstore>.

Federal Response Updated

An updated plan for mobilizing federal resources when communities and states are overwhelmed by natural and human-caused disasters was recently released by FEMA. The *Federal Response Plan*, which serves as the principal organizational guide for 26 federal agencies and the American Red Cross, details the roles and responsibilities of each agency activated to deliver emergency aid during a major crisis.

The revised plan incorporates a new Recovery Function Annex, which describes the structure and coordination activities that directly assist individuals, families, businesses, and state and local governments in recovering from disaster. It was created to integrate recovery and mitigation functions into the plan and incorporates recovery concepts that address floodplain management, flood insurance, environmental protection, historic preservation, mitigation, and risk management.

The updated plan also includes four new support function annexes covering Community Relations, Donations Management, Logistics Management, and Occupational Health and Safety, along with two new appendices that describe changes and revisions and provide an overview of a disaster operation. Additionally, the plan reinforces the use of the Incident Command System, mentions the importance of private-sector partnerships, and describes several new resources. It also incorporates an updated Terrorism Incident Annex.

The complete text of the revised plan is free from *FEMA Publications, Distribution Facility*, P.O. Box 2012, Jessup, MD 20794-2012; (800) 480-2520, and is also available on the FEMA Web site: <http://www.fema.gov/r-n-r/frp>.



The Internet Page(s)



These are only the latest disaster Internet resources we've encountered. For a comprehensive list of selected Internet/Web sites dealing with hazards and disasters, see <http://www.colorado.edu/hazards/sites/sites.html>.

All Hazards

<http://www.colorado.edu/hazards/assessbib.html>

The volume summarizing the findings of the Second U.S. Assessment of Research and Applications for Natural Hazards, *Disasters by Design: A Reassessment of Natural Hazards in the United States* (1999, 376 pp.) by Hazards Center director, Dennis S. Mileti, is now available from the National Academy Press (see the *Observer*, Vol. XXIII, No. 4, p. 3).

Among other issues, the assessment addressed the fundamental question: Why, despite all our knowledge about the causes and consequences of, and remedies for, disasters, do losses continue to rise? Among their many conclusions, the contributors to *Disasters by Design* found that one of the central problems has been the belief that we can use technology to control nature and "solve" problems posed by natural hazards. Instead, they recommend that the U.S. shift to a policy of "sustainable hazard mitigation," and that jurisdictions actively engage in debate and planning regarding what maximum levels of disaster loss are acceptable and thus where and how development should proceed. *Disasters by Design: A Reassessment of Natural Hazards in the United States* costs \$47.95, plus \$4.50 shipping and handling, and can be ordered from the National Academy Press, 2101 Constitution Avenue, N.W., Lockbox 285, Washington, DC 20055; (800) 624-6242 or (202) 334-3313; fax: (202) 334-2451; WWW: <http://www.nap.edu/bookstore>.

To support this massive study, a complete, extended bibliography for *Disasters by Design* is now available from the Natural Hazards Center Web site at <http://www.colorado.edu/hazards/assessbib.html>. This list of literature comprises all the citations provided by the numerous researchers, practitioners, reviewers, and others who contributed to the book. Roughly paralleling the organization of *Disasters by Design*, the bibliography is arranged by broad topic: History, Reviews, and Theory; Sustainable Development and Mitigation; Events, Losses, and Costs; Interactive Structure of Hazard; Adoption and Implementation of Mitigation; Tools for Mitigation; Disasters; and, Innovative Paths and New Directions. There is some duplication of references from one topic to another, but the compilers did not try to provide comprehensive citations for any one topic. Thus the reader in search of references on a particular subject should peruse two or three related sections, rather than focusing on a single one.

<http://www.disasternews.net>

The Disaster News Network reports on U.S. disaster response (as well as response to major international events that call for U.S. involvement), focusing on the work of nongovernmental organizations, particularly "faith-based" (religious) groups. It also provides information about how individuals and groups can help in disasters and includes information about volunteer opportunities in various regions of the country.

<http://www.gismaps.fema.gov>

The GIS and Software Development Team at the Federal Emergency Management Agency (FEMA) Mapping and Analysis Center have put together a new Web site that describes GIS operations at FEMA and offers maps generated for the latest disasters. Typical postings include hurricane tracking maps, model outputs of estimated wind damage, remote sensing maps of affected areas, maps of counties in federally declared disasters, and other maps to support disaster management. The site will also feature a selection of archived FEMA GIS maps, as well as background information about GIS and the FEMA team effort.

<http://www.usgs.gov/themes/hazards.html>

The hazard section of the U.S. Geological Survey's "Themes" Web site, which we've noted before, includes information on earthquakes, floods, landslides, volcanoes, wildfire, coastal storms and tsunamis, geomagnetism, and wildlife diseases. The site now also provides national maps showing areas of high risk for earthquake, volcano, landslide, flood, hurricane, and tornado hazards. The maps can be examined individually or collectively as a series of overlays. (Looking at the maps, one might think that the high plains of the western U.S. could be a region of relative safety, but then, as the USGS is quick to point out, the collective map does not plot winter storms, high wind hazards, recent flash floods, drought . . .)

<http://www.napawash.org/napa/index.html>

Under a cooperative agreement with the U.S. Geological Survey, the National Academy of Public Administration (NAPA) recently undertook an analysis of legal limitations on the dissemination of disaster management information within the United States that should be considered in developing an NDIN (National Disaster Information Network) as a national component of a Global Disaster Information Network (GDIN). The limitations involve intellectual property, privacy, liability, and security concerns. NAPA's summary report, *Legal Limits on Access to and Disclosure of Disaster Information* is available from the Web site above in both HTML and PDF formats. It analyzes the problem in depth, offers some solutions (although answers in many cases are not clear), and provides five recommendations to clarify and resolve these issues.

<http://www.ucm.es/info/isa/rc39.htm>
<http://sociweb.tamu.edu/ircd/>
<http://millersv.edu/~srg/ircd/archive.htm>
<http://www.usc.edu/dept/sppd/ijmed/>
<http://KFS009.sozilogie.uni-kiel.de/~discult/>

The International Sociological Association's (ISA's) Research Committee on Disasters (RC39) is a group of sociologists from around the world dedicated to studying and understanding disasters as social phenomena. The ISA Web site and the committee's own Web site (the first two URLs above) provide background information about the origin, mission, and activities of the group. The committee publishes its own newsletter, *Unscheduled Events*, available from the third URL, and a journal, *The International Journal of Mass Emergencies and Disasters*. Details about *Mass Emergencies*, including specifics about publication, subscription, current and upcoming contents, etc., are available from the fourth URL.

Among its many interests, the Research Committee on Disasters has begun examining and discussing the "popular culture" of disasters (see the *Observer*, Vol. XXIII, No. 2, p. 16), including everything from jokes and songs about disasters to myths, legends, novels, and other cultural artifacts relating to cataclysms of various sorts. The individuals interested in this topic are united through a mailing list that can be accessed through the final URL above.

<http://www.fema.gov/r-n-r/hpindex.htm>
<http://www.nthp.org>
<http://www.dia.org/mi-alliance/disaster/index.html>
<http://palimpsest.stanford.edu/>
<http://www.thc.state.tx.us/dsastr1.html>

FEMA's Response and Recovery Directorate maintains an "Historic Preservation" page at the first URL above. It describes FEMA's efforts to support historic preservation and the protection of cultural property from disasters, and provides links to legislative, educational, and preservation resource Web sites. The National Trust for Historic Preservation site also provides good information, although much of it (including access to its extensive library database) is available only to members. The Michigan Alliance for Conservation of Cultural Heritage, on the other hand, has launched a new Web site (the third address above) to help any individuals or institutions prepare for disaster. The site features a checklist for disaster planning; tips on recovering from calamities such as fires, floods, and earthquakes; a list of sources of disaster supplies, services, and equipment; a bibliography; and links to other resources on the Internet. One of those links is to "CoOL"—Conservation On-Line—a project of the Preservation Department of Stanford University Libraries. This site is a full-text library of conservation information. It includes recent news, a facility for finding people involved with conservation, an author index, a complete section on "Disaster Planning and Response," and numerous other links and resources. Indeed, the Internet has a surprising number of sites offering information on the protection of cultural property from disasters (see the State of Texas site indicated above, for example), and the sites listed above provide good places for the interested Net surfer to begin.

<http://www.disaster.info.desastres.net/dipecho/>

This is the Web site of the European Community Humanitarian Office's (ECHO's) new Disaster Preparedness, Information, and Mitigation Program for Natural Disasters in the Caribbean. The site offers the program's action plan, a preliminary study of the region, descriptions of the numerous projects now being supported by the program, and descriptions of ECHO emergency operations in the region. All information is provided in English, Spanish, and French. More information is also available from the *Officina ECHO Caribe, Calle La Lira #4 El Vergel, Santo Domingo, Dominican Republic; tel: (809) 472-1615; fax: (809) 472-3767 e-mail: dipecho@codetel.net.do.*

Wind

<http://www.civil.buffalo.edu/aaawe>

The American Association for Wind Engineering Web site has recently been moved to the State University of New York at Buffalo and extensively updated. It now includes "Wind Net"—a communication network intended to facilitate communication to and among wind engineering centers and to the political establishment that controls wind engineering funding. It also provides general information about the group, news about wind engineering meetings and recent wind hazard events, the association newsletter, several other full-text documents, and much additional information and data about wind hazards.

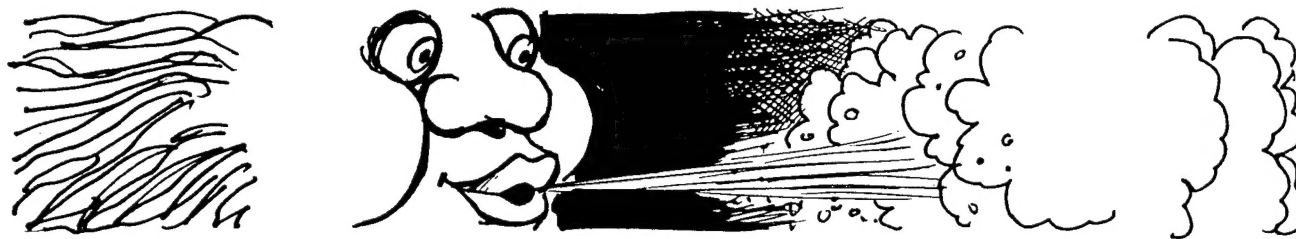
Hurricanes

<http://hurricanes.noaa.gov/>
<http://www.nws.noaa.gov/om/hurricane/index.html>

Just in time for hurricane season the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service's Office of Meteorology have created two new hurricane awareness Web sites offering information on hurricane awareness activities around the country. The NOAA site, entitled "Hurricanes: The Greatest Storms on Earth," presents the latest hurricane news and extensive background information, as well as links to numerous sources of hurricane information, including local sites. The Office of Meteorology site provides several on-line preparedness guides in both Spanish and English, current watches and warnings, on-line tracking charts, and links to many of the national agencies dealing with hurricane preparedness, response, and recovery.

<http://tropical.atmos.colostate.edu/forecasts/index.html>

No doubt many *Observer* readers are familiar with the annual forecasts of Atlantic hurricane activity issued by Professor William Gray and his colleagues at Colorado State University. This official Web site of that group provides much more than the usual bare-bones CNN Bill Gray sound bites. Rather, it offers in-depth information on both the processes and the results of the group's extensive investigations into pre-season climatological signals that anticipate upcoming hurricane activity.



Lightning, Severe Weather (and Wildfire)

http://www.nwstc.noaa.gov/d.HMD/Lightning/Lng_home.htm

The National Weather Service Training Center (NWSTC) is responsible for (among other things) training weather forecasters in the use of the new technology that forms the backbone of the modernized weather service. That technology includes AWIPS (Advanced Weather Interactive Processing System), the UNIX-based system that forecasters are now using to integrate and display data. To support AWIPS training, this section of the NWSTC Web site offers *extensive* information about lightning—from fundamental physics to detection and personal safety. The site includes several case studies of severe lightning outbreaks as well as references and a glossary of lightning terms.

<http://www.spc.noaa.gov>

<http://www.spc.noaa.gov/fire/>

The Web site of the Storm Prediction Center (SPC) in Norman, Oklahoma—part of the National Centers for Environmental Prediction—has expanded to include numerous “forecast products” (weather outlooks, storm/tornado watches and warnings, etc.), including the “Fire Weather Forecasts/Information” pages at the second URL above. These pages provide national-scale fire weather guidance for National Weather Service offices and other interested federal agencies dealing with wildland fire management. The site also includes severe storm statistics and archived weather data, a list of SPC publications, and a general description of the center.

<http://www.nws.noaa.gov/om>

<http://www.nws.noaa.gov/om/tpsterm.htm>

<http://www.nws.noaa.gov/om/hazstats.htm>

<http://www.nws.noaa.gov/om/awarenow.htm>

We keep finding new, interesting, and useful nooks and crannies in the National Weather Service's Office of Meteorology (OM) Web page (see the hurricane page listed above). For example, at the second URL is a page on “Advance Short Term Warnings and Forecasts” that includes information on the short-term prediction process; links to sites providing current short-term watches, warnings, advisories, etc.; information on how to deal with short-term warnings; and, of particular note, individual sections entitled “All About . . .” [thunderstorms and lightning, tornadoes, floods/flash floods, droughts, winter storms, hurricanes, heat waves, and wild fires—take your pick]. Each of these sections provides background information on the specific phenomenon, in most cases on-line information or a brochure on personal preparedness and response, and many links to other useful information on each hazard.

At the second URL the OM has placed on-line its “Summary of U.S. Natural Hazard Statistics for 1997”—a report of fatalities, injuries, and damage caused by severe weather in that year. The same site provides statistics for 1995 and 1996 as well.

The final URL is the OM's “AwareNow” page. *Aware* is the OM's useful hazard newsletter designed “to keep communications links open within the Agency and with the natural hazards community.” The “AwareNow” page provides immediate, on-line updates to that printed newsletter.

Earthquakes

<http://mceer.buffalo.edu>

<http://mceer.buffalo.edu/eqcatalogs.html>

The Web site of the Multidisciplinary Center for Earthquake Engineering Research (MCEER), headquartered at the State University of New York at Buffalo, provides extensive information on all aspects of seismic hazards. The “Earthquakes Catalogs” page listed above provides links to all earthquake catalogs known to the center and available on the Internet. The center has recently added *NCEER-91 Catalog of the Eastern United States*, by John Armbruster and Leonardo Seeber, to this page, as well as a link to an interactive search facility covering this new catalog provided by the Center for Earthquake Research and Information at the University of Memphis.

<http://www.eeri.org/ethics/ethics.html>

The Earthquake Engineering Research Institute (EERI) has added a new section to its already highly informative Web site. "Seismic Ethics on the Web" is an interactive forum wherein general information about ethical problems is presented along with case studies of specific ethical dilemmas in earthquake risk reduction. Concerning these cases, readers are prompted to indicate which of several possible actions they believe are the most appropriate to a particular situation. Their anonymous responses are tabulated, summarized, and posted on the site. Two initial cases are already on-line. Take a look and ponder the pain of existential choice . . .

<http://www.erc-assoc.org>

This is the common Web site of the three National Science Foundation-sponsored Engineering Research Centers (ERCs)—the Multidisciplinary Center for Earthquake Engineering Research (MCEER) (see the *Observer*, Vol. XXIII, No. 5, p. 4); the Pacific Earthquake Engineering Research (PEER) Center (see the *Observer*, Vol. XXIII, No. 4, p. 4); and the Mid-America Earthquake (MAE) Center (see the *Observer*, Vol. XXIII, No. 3, p. 4). This group of interdisciplinary centers, located at universities across the United States, supports the pursuit by academia and industry of cutting-edge research in complex system engineering. The ERCs also promote earthquake education and the dissemination of earthquake hazard mitigation information. The ERC Web site is intended as an information clearinghouse for use by the ERCs, their faculty, students, and any other persons interested in the work of the centers. Among its components are a *Best Practices Manual*, an *Annual Meeting Summary*, links to individual center sites, an ERC students' page, a listing of ERC education programs, a special topics section, a site map, and a site search mechanism.

<http://seismo.ethz.ch/GSHAP>

The Global Seismic Hazard Assessment Program (GSHAP) was launched in 1992 by the International Lithosphere Program (ILP) with the support of the International Council of Scientific Unions (ICSU), and endorsed as a demonstration project of the International Decade for Natural Disaster Reduction (IDNDR). The GSHAP project terminated at the end of 1998. This site presents the considerable information on global seismic hazards produced by the program in the form of tables, reports, and numerous regional maps.



Floods

<http://www.tu.org/library/conservation/floodbrochure.pdf>

<http://www.ncrc.nps.gov/rca/rca-211.html>

Trout Unlimited and the National Park Service's Rivers, Trails, and Conservation Assistance Program have developed a brief, well-illustrated brochure entitled *Restoring Streams to Reduce Flood Loss*. It can be downloaded in PDF format from the first address above or can be viewed on-line at the second. Printed copies are available from Rob Campellone, National Park Service, 1849 C Street, N.W., MS-3622, Washington, DC 20240.

<http://www.extension.unr.edu/Flood/Flood.html>

The University of Nevada Reno's extension office has prepared this "Flood Facts" Web site with much information about flood preparedness, the history of flooding in the region, flood dynamics, and long-term mitigation and solutions to flood problems. The site also includes regional flood maps and survival tips. Besides being useful in itself, this Web page provides a model for the development of similar resources elsewhere to address local or regional flood hazards.

<http://www.dewberry.com/fip>

Dewberry & Davis, a flood mapping contractor to FEMA for the National Flood Insurance Program (NFIP), has launched this Flood Mapping Information Center Web site. It includes much information about the NFIP; current flood mapping news and information; fact sheets for homeowners, study contractors, state and local officials, and builders and developers; useful links; information for FEMA staff; and an on-line news report.

<http://www.earthsat.com>

<http://www.earthsat.com/flood/floodwat.html>

The Earth Satellite Corporation Web site includes a section on flooding entitled "Floodcast" that offers a suite of on-line flood forecast maps showing the vulnerability of counties in the U.S. to flooding, as well as maps of forecasted flood danger in the U.S. for the upcoming 24 hours. The site also provides information about tools and systems for floodplain management available from the corporation.

Chemical Emergencies

<http://www.epa.gov/swercepp/>

The U.S. Environmental Protection Agency's Chemical Emergency Preparedness and Prevention Office (CEPPO) provides leadership, advocacy, and assistance to: 1) prevent and prepare for chemical emergencies; 2) respond to environmental crises; and 3) inform the public about chemical hazards in their communities. To protect human health and the environment CEPPO develops, implements, and coordinates regulatory and nonregulatory programs. The office's Web site includes pages on prevention and planning, preparedness, emergency response, international programs, and counter-terrorism. It also provides sections on stakeholders in chemical emergency preparedness, databases and software, laws and regulations, and publications.

Risk

<http://www.riskinstitute.org>

The Web site of the Public Entity Risk Institute (PERI) was recently revamped to provide more, and more accessible, information. Visitors to the site will find three new sections focusing on projects funded by the PERI Grant and Research Program, application for grant funding, and news and announcements. The redone site also includes a section for conducting interactive symposia that will be activated later this year. In addition, the site's "Clearinghouse" section profiles the services of over 100 risk management, local government, disaster management, environmental, safety, health, human resources, and publishing organizations. Of course, the site also offers information about the institute itself and its many activities.

<http://www.risk-analysis-center.com>

The Risk Analysis Center is a new site containing information about the wide variety of risks faced by human beings—crime, disease, sports injuries, food, workplace accidents, travel, pollution, natural hazards, and other risks ranging from the remote to the ever-present. The site contains abstracts of articles from the U.K. national press and international press (scanned daily), and from scientific, technical, and medical journals, and thus serves as an information resource for persons researching health, environmental, or other subjects involving human welfare. Access to the site is free on registration. For more information about the Risk Analysis Center, contact Lorraine McCarthy, Production Editor, Risk Analysis Center, NTC Publications Ltd, Farm Road, Henley-on-Thames RG9 1EJ, U.K.; tel: 0044 1491 418668; fax: 0044 1491 571188; e-mail: Lorraine_McCarthy@risk-analysis-center.com.

Y2K

http://www.fema.gov/y2k/bst_prac.htm

<http://www.fema.gov/y2k/y2k510.htm>

<http://www.fema.gov/y2k/y2k525.htm>

FEMA has added a "Y2K Best Practices" page to the Y2K section of its Web site. The page includes descriptions of how individual states and communities are managing the Y2K issue. At the second URL above, the agency offers two new Y2K courses in support of local Y2K outreach programs: "Getting Ready for Y2K: A Workshop for Emergency Management" and "Y2K & You: A New Horizon." The former includes five modules covering basic understanding of the Y2K issue, assessment of Y2K readiness, development of Y2K contingency plans, promotion of public awareness, and exercising of plans. The complete course materials include an instructor guide, video, tool kit, and note-taking guide. The training material is available in three formats: traditional classroom, interactive Internet, and CD-ROM. "Y2K and You" provides answers to questions and concerns raised by FEMA employees about Y2K. Finally, at the last URL, FEMA offers an on-line version of its Emergency Education Network (EENET) broadcast "Y2K: A Leadership Issue . . . A Matter of Will and Judgement," the first of three programs on Y2K and emergency management. This initial broadcast features planning, emergency response, community, and public information issues, as well as actual examples of steps being taken in various communities to prepare for and mitigate this problem.

Discussion

<http://www.speccomm.com:81/guest/RemoteListSummary/actnow>

<http://www.speccomm.com:81/guest/RemoteListSummary/CommunityPrep>

The Federal Emergency Management Agency's Community and Family Preparedness Program (CFP) was created to encourage and support the growing community of professional disaster preparedness educators—emergency managers, firefighters, volunteers, teachers, and the many others who lead community and family disaster preparedness efforts around the country. The CFP works with such national partners as the American Red Cross, the International Association of Emergency Managers, the National Emergency Management Association, the National Weather Service, and others, including hundreds of community-based programs organized in and outside of government. To support its mission, the CFP now publishes its newsletter, *Act Now Updates*, via e-mail. Persons interested in receiving the *Updates* can subscribe via the first URL above. Current and previous issues are available on the World Wide Web at <http://www.emforum.org/vlibrary/actnow.htm>. The program is also instituting a separate, dedicated e-mail discussion list for CFP issues. Interested persons can subscribe via the second URL and can also post ideas or inquiries by sending e-mail to cfp@emforum.org. Finally, the CFP will host a live, on-line discussion once a month via the Emergency Information Infrastructure Partnership Web site: <http://www.emforum.org>. Details are available from that site.



ON THE LINE

Tying Research to Practice Providing Standard Disaster Safety Messages

For many years, disaster researchers have been stating in various ways how important it is that the public receive consistent information about how to prepare for disasters and respond appropriately when threatened. Most organizations that provide disaster safety advice to the public strive to ensure that their information is accurate. Unfortunately, there are examples in both printed form and on the World Wide Web in which safety advice is inaccurate, inconsistent, or just plain wrong.

We know that organizations that provide safety advice to the public want to give accurate, useful, and appropriate information, but sometimes the sources conflict, and those responsible for distributing safety advice get confused by these differences. So, a statement about what the current correct safety advice is, plus background support, statistics, or explanations, are all needed to ensure that those who give out safety advice understand not only *what* the message is, but *why* it is written the way it is.

That's why major national organizations with a role in studying and communicating disaster safety information have collaborated to produce a new resource called *Talking About Disaster: Guide for Standard Messages*.

Developed with support from the Lowes Home Safety Council, this guide provides standardized safety messages for 13 hazards as well as general disaster preparedness information. The messages, which include preparedness, mitigation, and safety advice, have been reviewed and approved by national organizations comprising the National Disaster Education Coalition, a group that works to deliver consistent disaster preparedness information to the public. Following each message are explanations, statistics, or reasons that reinforce the credibility of the message and that correct myths and misinformation.

The coalition is composed of the American Red Cross; the Federal Emergency Management Agency; the Institute for Business and Home Safety; the International Association of Emergency Managers; the National Fire Protection Association; the National Weather Service; the U. S. Department of Agriculture/Cooperative State Research,

Education, and Education Service; and the U. S. Geological Survey.

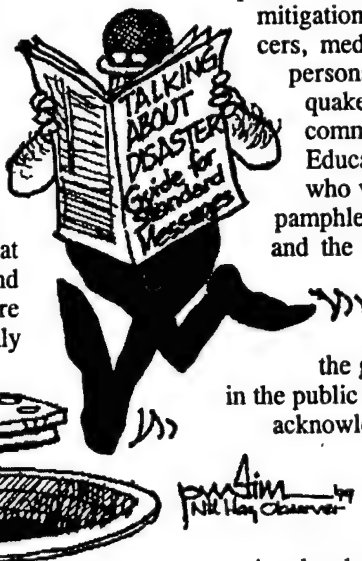
Users of this resource could include emergency managers, meteorologists, teachers, disaster and fire educators, public affairs/public relations personnel, mitigation specialists, managers and officers, media personnel, and/or any other persons in the severe weather, earthquake, disaster, or communications communities. The National Disaster Education Coalition hopes that anyone who writes disaster safety brochures, pamphlets, posters, articles, Web sites, and the like will use information from

this guide in their materials. The safety information is intended for dissemination to the general public, and all content is in the public domain. All we ask is that users acknowledge the National Disaster Education Coalition as the source. Information on how to prepare that acknowledgment is available in the guide.

Any local American Red Cross chapter can order additional copies of this guide from the Red Cross central warehouse as stock number A4461M. The current cost is \$3.00 per copy, plus shipping. It is also available in both HTML and downloadable PDF format on the World Wide Web at: <http://www.redcross.org/disaster/safety/guide.html>

The members of the National Disaster Education Coalition consider this effort a major breakthrough. We hope that everyone who has a role in communicating safety advice to the public obtains a copy of the guide and reviews its content. When opportunities arise to update Web sites, brochures, or other public information, we hope this guide will be used to ensure technical accuracy and a consistent message.

Rocky Lopes
Convener
National Disaster Education Coalition



A Clarification and a Call for a National Wind Research Program

Editor:

I would like to take this opportunity to update the article describing the HomeSaver project proposed by the Idaho National Engineering and Environmental Laboratory (INEEL) that appeared in the May 1999 issue of the *Natural Hazards Observer*. In March of this year, the National Research Council issued a report of its review of the need for a large-scale wind testing facility of the type proposed by INEEL. The study was undertaken at the request of the U.S. Department of Energy and conducted by a committee specially selected for their knowledge of extreme winds and their effects on structures, particularly "non-engineered" buildings such as homes and low-rise commercial structures.

The committee reviewed the facility proposed by INEEL, conducted a survey of the wind research community, and consulted the reports of several recent meetings that discussed research needs in wind engineering. After extensive discussion and deliberation, the committee found a large-scale wind testing facility unsupportable on both technical and economic grounds and recommended that the Department of Energy not construct one.

To develop its findings and recommendations, the committee employed a rational and comprehensive decision process. Although the committee agreed that research on structures should be carried out as close to full-scale as possible and that a large-scale testing facility could produce potentially useful information, the committee identified several alternative methods of producing this information. The committee concluded that a research facility conducted specifically for this purpose would be an extremely costly method of producing data that would have only limited value in actually reducing the hazards posed by extreme winds. At the present time, funding from all sources for research on extreme winds in the United States is in the range of \$5 to \$8 million. The cost for the pilot stage of the facility described in the article is \$50 million and estimates for a fully functional facility approach \$300 million.

The committee was and remains concerned that in the absence of a national consensus and framework for reducing the hazards of extreme winds, a facility of the type proposed by INEEL would consume all available resources for wind engineering research and hazard reduction and produce few results of tangible and lasting value. It was the committee's carefully considered opinion that the participation of the Department of Energy and the resources proposed for the HomeSaver project would be better devoted to the establishment and support of a national wind hazard reduction program. The committee believes that far more can be done

through a coordinated national program to identify and implement the critical actions that need to be taken by government, industry, and individual homeowners to reduce the human and economic losses from extreme winds.



Prudent stewardship of limited resources requires that research funds be allocated in a technically wise and economically efficient manner. The committee believes that in the case of wind hazard reduction, this would best be accomplished through the development of a national program, not the construction of a single, expensive facility of limited technical value.

Richard S. Little
Board on Infrastructure and the Constructed
Environment
Commission on Engineering and Technical Systems
National Research Council

The committee's full report, *Review of the Need for a Large-scale Test Facility for Research on the Effects of Extreme Winds on Structures* (1999, 40 pp.), may be found on-line at <http://www.nap.edu/catalog/6458.html>. A limited number of printed copies are also available from the Board on Infrastructure and the Constructed Environment, National Research Council, 2101 Constitution Avenue, Washington, DC 20418; (202) 334-3376; fax: (202) 334-3370.

Making Connections in Earthquake Science and Engineering

Editor:

I read with interest the Invited Comment in the May 1999 issue of the *Natural Hazards Observer* by Susan Tubbesing ("Reflections on 50 Years of Earthquake Hazard Mitigation—Challenges for the Future"), but was surprised to find no mention of the Southern California Earthquake Center (SCEC). Reference to the center could have been embedded nicely in the second to last paragraph of the second column on page 2 in the following manner: "The establishment of these centers, *along with the Southern California Earthquake Center earlier in the decade*, demonstrates NSF's commitment to multidisciplinary research and outreach." Also, SCEC should have been mentioned in the first paragraph of column 1, page 3. SCEC has been a partner with the CDMG [California Division of Mines and Geology] in the development of hazard maps for southern California. Some of the methodology and data were based on SCEC research. Furthermore, SCEC probably has been the most important experiment in multidisciplinary, integrative science within the seismological community over the last decade, and one that is almost certain to be copied in the future.

Historically, the earthquake science and engineering communities have often been at odds with one another. Thankfully, that is now changing. Serious progress has been made over the last several years in acknowledging each other's contributions to earthquake hazard mitigation. In fact, the Southern California Earthquake Center has gone

beyond simple acknowledgment and is developing connectivities between the two disciplines that will be needed as we gear up for the next big technological challenge involving the application of complete time-history ground-motion prediction to performance-based engineering design. These connectivities will only grow as the new National Science Foundation engineering centers reach full stride.

At SCEC we include engineers on our advisory council and at our workshops. We are working hand in hand with engineers and local jurisdictions on issues of seismic safety in southern California. We have teamed up with PEER [Pacific Earthquake Engineering Research Center] on work in northern California and with CUREe [California Universities for Research in Earthquake Engineering] on the wood-frame building problem [see the *Observer*, Vol. XXIII, no. 3, p. 14]. And our outreach program specifically targets the engineering community as primary end user. Overview articles like Tubbesing's (particularly given the readership of the *Observer*) need to fairly recognize the contributions of all entities, and help to build these all-important bridges. The impact on earthquake hazard mitigation will be greatest when we pull together and share the credit.

Tom Henyey, Professor
University of Southern California,
and
Director, Southern California
Earthquake Center

USGS Opens River Studies Station in Missouri

From the drastic impacts of major floods and droughts to more gradual shifts in channels and floodplain habitats, large river systems such as the Missouri are always changing. Over the past century human activities have also caused physical and biological transformations in America's major rivers. Gathering the information needed to understand the dynamic nature of large rivers, as well as the biological systems they support, will be the focus of a new United States Geological Survey (USGS) River Studies Station, located at the USGS Columbia Environmental Research Center in Columbia, Missouri.

The new station will allow experts from the many disciplines related to riverine systems, such as fisheries management, aquatic biology, ecology, hydrology, floodplain management, and remote sensing, to work together to answer complex questions about how large river systems function. The initial focus of the station will be the lower Missouri River, which has been extensively managed for navigation, flood control, and power generation since the 1800s. The emphasis will be on field studies that inform resource managers and policy makers regarding how to improve river management and wildlife habitat restoration. Station researchers will also monitor a wide range of geological, hydrological, and biological factors in collaboration with other USGS facilities, federal agencies, state agencies, and universities.

For more information about the new USGS River Studies Station, contact *Marcia K. Nelson or Robert Jacobson, U.S. Geological Survey, Columbia Environmental Research Center, 4200 New Haven Road, Columbia, MO 65201; (573) 876-1875 or (573) 875-5399; WWW: http://www.usgs.gov/public/press/public_affairs/press_releases/pr796m.html.*

New Stuff from the World's Oldest Disaster Center

The University of Delaware is home to the Disaster Research Center (DRC), the first social science research center in the world devoted to the study of disasters. That center conducts research on natural and technological disasters and other community-wide crises. DRC researchers have carried out nearly 600 systematic studies on a broad range of disaster topics since the center's inception, traveling to communities throughout the U.S. and around the world.

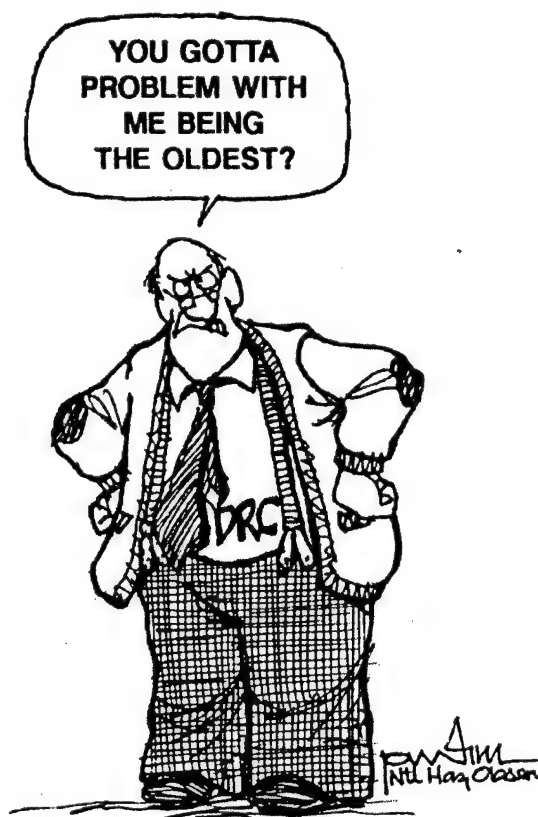
We recently received a slew of DRC's most recent publications, and they are listed below. To order any of these items, contact the *DRC, Publications, University of Delaware, Newark, DE 19716; (302) 831-6618; fax: (302) 831-2091; e-mail: castelli@udel.edu; <http://www.udel.edu/DRC/homepage.htm>*. Add 10% to all orders for postage and handling. All orders must be prepaid.

- **Historical and Comparative Disaster Series #11: *Problems of Field Research: Techniques and Procedures of the Disaster Research Center in the 1960s***, by E.L. Quarantelli. 1998. 43 pp. \$20.00.
- **Dissertation #31: *Rebounding from Environmental Jolts: Organizational and Ecological Factors Affecting Business Disaster Recovery***, by James M. Dahlhammer. 1998. 300 pp. \$25.00.
- **Dissertation #32: *Role Enactment in Disaster: Reconciling Structuralist and Interactionist Conceptions of Role***, by Gary R. Webb. 1998. 178 pp. \$25.00.
- **Dissertation #33: *Collective Violence and Theories of Collective Behavior: An Analysis of the 1992 Los Angeles Unrest***, by Lisa M. Reshaur. 1998. 322 pp. \$25.00.

Preliminary Papers (\$5.00 each):

- **#262: *The Proposed Establishment of a Global Disaster Information Network (GDIN): The Social Dimensions Involved***, by E.L. Quarantelli. 1998. 28 pp.
- **#263: *Disaster Recovery: Research Based Observations on What it Means, Success and Failure, Those Assisted and Those Assisting***, by E.L. Quarantelli. 1998. 16 pp.
- **#264: *How Will Social Science Help Us Deal with Earthquakes?*** by Kathleen Tierney. 1998. 7 pp.
- **#265: *Noah and Disaster Planning: The Cultural Significance of the Flood Story***, by Russell R. Dynes. 1998. 28 pp.

- **#266: *The Computer Based Information/Communication Revolution: A Dozen Problematical Issues and Questions They Raise for Disaster Planning and Management***, by E.L. Quarantelli. 1998. 27 pp.
- **#267: *The Popular Culture of Disaster: What Is It and Why Is It Important?*** by Gary R. Webb. 1998. 7 pp.
- **#268: *Major Criteria for Judging Disaster Planning and Managing Their Applicability in Developing Societies***, by E.L. Quarantelli. 1998. 42 pp.



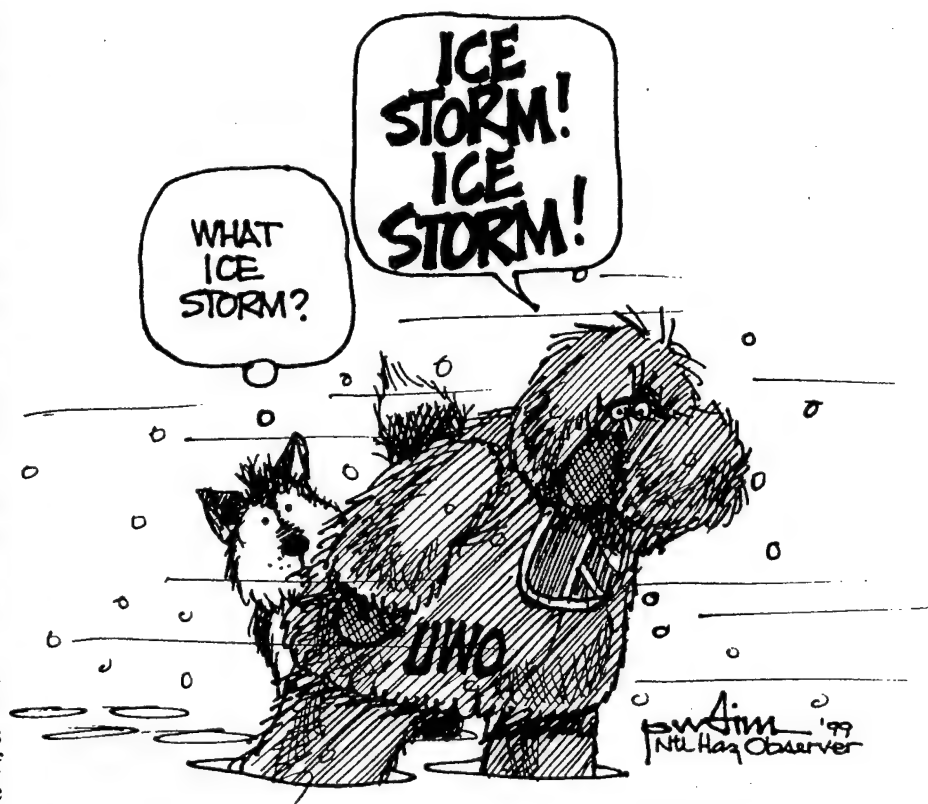
- **#269: *Dealing with Disaster in the 21st Century***, by Russell R. Dynes. 1998. 9 pp.
- **#270: *Comments on Drabek and Other Encyclopedists***, by Russell R. Dynes. 1998. 6 pp.
- **#272: *Seismic Waves in Intellectual Currents: The Uses of the Lisbon Earthquake in 18th Century Thought***, by Russell R. Dynes. 1998. 27 pp.
- **#273: *The Field Turns Fifty: Social Change and the Practice of Disaster Field Work***, by Kathleen J. Tierney. 1998. 31 pp.

Natural Hazards Institute to Be Established at UWO

The University of Western Ontario (UWO) is partnering with the Insurance Bureau of Canada (IBC) to establish a research center dedicated to reducing the impact of natural disasters. The Ontario Research and Development Challenge Fund, the university, and the IBC will each contribute \$1.2 million to help establish the new Institute for Catastrophic Loss Reduction.

The institute will comprise a multidisciplinary research group with the mission of reducing the human and economic costs of natural hazards, including tornadoes, floods, and ice storms such as the one experienced in eastern Ontario and Quebec in January 1998. Alan Davenport, founding director of the university's Boundary Layer Wind Tunnel Laboratory, will serve as the institute's research director. Davenport will work with two new research chairs who will head different aspects of the institute's activities—severe weather/earthquakes and catastrophic loss reduction.

For more information on this initiative, contact Judy Noordermeer, UWO Department of Communications and Public Affairs, London, Ontario, Canada N6A 5B8; (519) 679-2111, ext. 5468; e-mail: jnoorden@uwo.ca; WWW: <http://www.uwo.ca>.



Hazards Centre Seeking Australasian Disaster Researchers

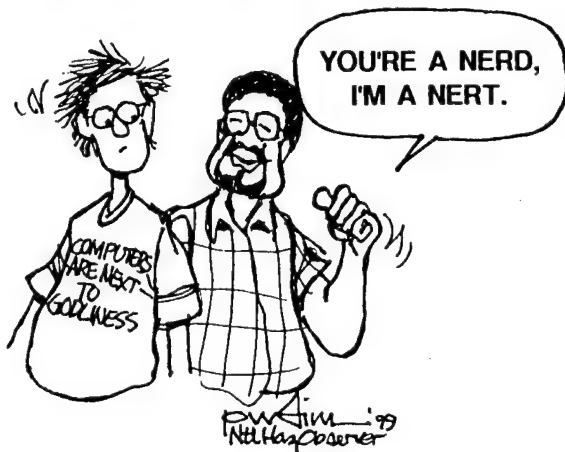
The industrious folks down at the Natural Hazards Research Centre in Australia (as opposed to the industrious folks up here at the Natural Hazards Research Center in the U.S.) have assembled an *Australasian Disaster and Hazard Research Directory* and made it available on the World Wide Web at <http://www.es.mq.edu.au/NHRC/ema.html> (see the *Observer*, Vol. XXII, No. 6, p. 3).

A joint project between the centre and Emergency Management Australia, the directory attempts to catalog all hazards/disaster research and researchers in the Australia/South Pacific/Southeast Asia region. It includes synopses, complete contact information, and other details about various research projects and allows on-line searches by hazard, disaster, country, researcher, or keyword.

To ensure comprehensiveness, the managers of this resource invite persons from all parts of the world who are conducting hazards/disaster research pertaining to the Australasian region to submit descriptions of their projects as well as research results. Information and updates can be provided through the Web site or by contacting *Keping Chen* or *Russell Blong*, Natural Hazards Research Centre, Macquarie University, North Ryde, New South Wales 2109, Australia; tel: +61-2-9850 8433; fax: +61-2-9850 9394; e-mail: kchen@laurel.ocs.mq.edu.au or rblong@laurel.ocs.mq.edu.au.

Introducing the San Francisco Disaster Registry Program

The San Francisco Disaster Registry Program (DRP) for Seniors and Persons with Disabilities is part of a comprehensive regional strategy to provide disaster health services to vulnerable populations. The DRP, under the direction of the San Francisco Department of Public Health, does not depend upon traditional response agencies, such as police, fire, and paramedics. Rather, it uses "emergent" volunteers—people who come forward after a disaster and ask what they can do to help. Since traditional response agencies can be overwhelmed in a disaster, the DRP response model represents a practical solution that taps previously under-used resources. Experience from the Loma Prieta earthquake and similar events has shown that large numbers of such volunteers will be available and that they need to be included in any organized response effort.



In keeping with newer disaster planning models, the DRP addresses disaster-related needs of vulnerable populations throughout mitigation, preparation, response, and recovery. As a collaboration among local, community-based organizations and government, the DRP coordinates a number of activities to minimize disaster vulnerability, while at the same time maximizing effective response to the targeted populations. Some of these activities include:

- Developing training programs for residents of senior residential facilities, clients of community-based organizations (CBOs) and government agencies that serve the target populations, staff members of these organizations and agencies, and Neighborhood Emergency Response Team (NERT) graduates who elect to receive supplemental training on special needs populations;
- Conducting broad community outreach to get the word out to isolated individuals—those who may need the DRP the most—about how they can become more "disaster resilient";
- Supporting broad collaboration in response planning and field exercises among those who are or will be involved in disaster response to seniors and persons with disabilities. On April 17th, an initial exercise included volunteers from the American Red Cross, the Auxiliary Communications Service, NERT's, and the Volunteer Center of San Francisco—all of whom worked with the Department of Public Health and the Mayor's Office of Emergency Services.

For further information about San Francisco's Disaster Registry Program for Seniors and Persons with Disabilities, contact **Ron Lopez**, Emergency Medical Services Section, San Francisco Department of Public Health, 1540 Market Street, Suite 220, San Francisco, CA 94102; (415) 554-9976; fax: (415) 241-0519; e-mail: ron_lopez@dph.sf.ca.us.

Two Groups Promoting New Technology in Disaster Management . . .

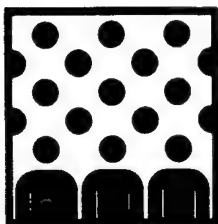
The Disaster Management Support Project

The Disaster Management Support Project is one of six projects adopted by the Committee on Earth Observation Satellites in its effort to develop an integrated global observing strategy and improve use of existing and planned earth observation satellite data. Over the past 18 months, the project has held six working sessions to solicit information and suggestions from space agencies and disaster managers to develop its strategy. The project has initially chosen to highlight drought, earthquakes, fires, floods, oil spills, tropical cyclones, and volcanic ash. For more information, contact **Janice Sessing**, NOAA/NESDIS, Office of International and Interagency Affairs, 1315 East-West Highway, SSMC3, Room 3620, Silver Spring, MD 20910-3282; (301) 713-2024; fax: (301) 713-2032; e-mail: jsessing@nesdis.noaa.gov.

The Canada Centre for Remote Sensing

Scientific teams at the Canada Centre for Remote Sensing (CCRS) are involved in both assessing and demonstrating the potential uses of remote sensing data in managing disasters. Recently, for example, RADARSAT data were used to track the devastation caused by Hurricane Mitch. In collaboration with other national institutions, CCRS is studying the use of remote sensing in predicting, managing, and mitigating such natural disasters as floods, droughts, oil spills, forest fires, and landslides. For more information, contact **Terry Pultz**, Applications Division, CCRS, 588 Booth Street, Ottawa, Ontario, Canada K1A 0Y7; (613) 947-1316; fax: (613) 947-1385; e-mail: terry.pultz@ccrs.nrcan.gc.ca.

[Adapted from *Network Newsletter*, a publication of the Environmental and Societal Impacts Group, National Center for Atmospheric Research.]



CONFERENCES AND TRAINING

Below are recent conference announcements received by the Hazards Center. A comprehensive list of hazard/disaster meetings is posted on our World Wide Web site: <http://www.colorado.edu/hazards/conf.html>.

FEMA to Offer International Emergency Management Training

The Federal Emergency Management Agency (FEMA) trains U.S. emergency managers through its Emergency Management Institute (EMI) in Emmitsburg, Maryland. Now, for the first time, this training is being made available to emergency management officials from other countries. EMI will offer a one-week International Emergency Management Training Institute, September 6-10, 1999. Students can select one of three courses: "Emergency Preparedness," "Responding to Disasters and Emergencies," and "Natural Hazards Mitigation." The training is free, but applicants are responsible for their own transportation, room, and meals. Applicants should be proficient in English. For more information and an application form, on the World Wide Web, see <http://www.fema.gov/emi/internl.htm>. Alternatively, interested persons can contact the Emergency Management Institute, National Emergency Training Center, Emmitsburg, MD 21727, USA; fax: (301) 447-1497; e-mail: emi@fema.gov.

Disaster Management Workshops. Offered by: University of Wisconsin-Madison, Department of Engineering Professional Development. Madison, Wisconsin: September 20-24, 1999. This seminar series is designed for emergency managers from business, industry, government, service, and community organizations. Participants can enroll in any or all of five courses: "Emergency Information Management"; "Disaster Communications"; "Response Planning"; "Damage, Needs, and Resources Assessment"; and "Monitoring, Evaluation, and Reporting." Detailed information is available from Katie Peterson, Department of Engineering Professional Development, University of Wisconsin-Madison, 432 North Lake Street, Madison, WI 53706; (800) 462-0876; fax: (608) 263-3160; e-mail: custserv@epd.engr.wisc.edu; WWW: <http://epd.engr.wisc.edu/>.

Southern California Earthquake Center (SCEC) Annual Meeting. Palm Springs, California: September 27-29, 1999. Composed of participants from eight academic institutions and two U.S. Geological Survey (USGS) offices, SCEC is a National Science Foundation Science and Technology Center, co-funded by the USGS. The center's mission is to promote earthquake hazard reduction by defining when and where future damaging earthquakes will occur in Southern California, calculating expected ground motions, and communicating this information to the public. The center's goal is to develop a "Master Model" of seismic hazards in Southern California by integrating various earth science data through probabilistic seismic hazard analysis. For more information about SCEC and the center's annual conference, contact SCEC, University of Southern California, Los Angeles, CA 90089-0742; (213) 740-5843; fax: (213) 740-0011; e-mail: sccecinfo@usc.edu; WWW: <http://www.scec.org>.

Third DOMODIS (Documentation of Mountain Disasters) Workshop. Sponsors: International Congress of Scientific Unions, U.N. International Decade for Natural Disaster Reduction Secretariat, and International Association of Geomorphologists. Bucharest, Romania: September 30-October 2, 1999. The aim of the DOMODIS project is to improve the procedures, tools, and organizational structures necessary to assess the physical processes that lead to catastrophic events in mountainous areas and to document the occurrence of such events. The project is working to establish formal organizational structures to collect data regarding these catastrophes and to compile a manual regarding practices in this field. The conference language will be English. Oral or poster presentations are being solicited and should be delivered to the conference organizers by August 15. For detailed information, contact Dan Balteanu, Institute of Geography, Romanian Academy, Str. D. Racovita Nr.12, R-70307 Bucuresti 20, Romania; tel: 0040-1-3135990; fax: 0040-1-4112485; e-mail: balteanu@valhalla.racai.ro.

Tsunami Workshop: "Tsunami Warning Beyond 2000: Theory, Practice, and Plans." Sponsor: International Union of Geodesy and Geophysics Tsunami Commission. Seoul, Korea: September 30-October 2, 1999. This workshop will consider the state of tsunami warning in the Pacific, evaluate current performance, and identify possible improvements in warning speed,

accuracy, and reliability. It will also review current tsunami science—from seismic generation to public preparedness. For more information, contact V. Gusiakov, *Tsunami Laboratory, Computing Center, Lovrentieva, 6, Novosibirsk 630090, Russian Federation*; tel: (7) (3832) 34-20-70; fax: (7) (3832) 32-42-59; e-mail: gvk@omzg.sssc.ru; or Francois Schindelé, *Laboratoire de Détection et de Géophysique, BP 12, 91680 Bruyères-le-Chatel, France*; tel: (33) 1 69 26 78 12; fax: (33) 1 69 26 70 23; e-mail: schindel@ldg.bruyeres.cea.fr.

International Decade for Natural Disaster Reduction (IDNDR) Symposium on "The RADIUS Initiative—Towards Earthquake Safe Cities." Tijuana, Mexico: October 11-14, 1999 (tentative). The Secretariat of the International Decade for Natural Disaster Reduction (IDNDR) launched the RADIUS (Risk Assessment Tools for Diagnosis of Urban Areas Against Seismic Disaster) initiative to help reduce urban earthquake losses, particularly in developing countries. In collaboration with nine selected cities around the world, the RADIUS initiative is developing practical tools for seismic risk assessment of urban areas, raising public awareness, and providing support and direction for the development and implementation of disaster mitigation measures. In addition to the nine case study cities, 70 cities are participating in RADIUS through the comparative study, "Understanding Urban Seismic Risk Around the World." Thirty-three cities are carrying out seismic risk assessments with independent resources and are participating in the RADIUS project as "Associate Cities" in order to share information and cooperate internationally. This meeting will survey the work of the RADIUS Project over the Decade. For specifics, contact the United Nations IDNDR Secretariat, Palais Wilson, 52 rue des Paquis, CH-1201 Geneva, Switzerland; tel: (41 22) 917 9722; fax: (41 22) 917 9098; e-mail: marianne.muller@dha.unicc.org; WWW: <http://www.idnдр.org> or <http://www.geohaz.org/radius>.

"Living on Shaky Ground"—10 Years After Loma Prieta. Sponsors: Association of Bay Area Governments (ABAG) and others. Oakland, California: October 14-15, 1999. This meeting will focus on lessons from the 1989 Loma Prieta earthquake and planning for the future. Representatives from most of the federal and state agencies that dealt with that disaster will discuss their experiences and the insights they gained. For information, see the "What's New" section of the ABAG Web site: WWW: <http://www.abag.ca.gov>, or, after July 15, contact ABAG, P.O. Box 2050, Oakland, CA 94604-2050; (510) 464-7900; fax: (510) 464-7970.

National Conference: "Rivers '99: Towards Sustainable Development." Sponsors: Universiti Sains Malaysia, Department of Irrigation and Drainage Malaysia, and others. Penang, Malaysia: October 14-17, 1999. This meeting will include sessions on water hazards and disaster management as well as virtually all other aspects of river basin management. For a conference brochure, contact the Secretary, National Conference on "Rivers '99: Towards Sustainable Development," School of Humanities, Universiti Sains Malaysia, 11800 Penang, Malaysia; tel: 6-04-6577888, ext. 3333/3375; fax: 6-04-6563707; e-mail: nwchan@usm.my; WWW: <http://www.hum.usm.my/rivers99.htm> or <http://www.utusan.com.my/genius/water/default.htm>.

Fourth Annual Conference on Crises and Disasters Management. Sponsor: Crisis Research Unit, Ain Shams University.

Cairo, Egypt: October 30-31, 1999. The major topics to be addressed at this conference include case studies from the industrial, agricultural, tourism, public utilities, energy, transportation, and communication sectors; natural and environmental disasters and their social, psychological, economic, and legal impacts; production, financial, and technical crises faced by business and government organizations; communications and media in crisis and disaster management; and the effects of global and regional crises on local organizations. Abstracts are due July 31. For details and a conference brochure, contact Mohammed Rashad El-hamrawy, Crisis Research Unit, Ain Shams University, Abbasia, Cairo, Egypt; tel: (02) 2619509; fax: (02) 4025905/2609167.

24th Annual Climate Diagnostics and Prediction Workshop. Co-sponsors: Climate Prediction Center, National Centers for Environmental Prediction/National Oceanic and Atmospheric Administration; Institute for the Study of Planet Earth and Institute of Atmospheric Physics, University of Arizona. Tucson, Arizona: November 1-5, 1999. This workshop will provide participants the opportunity to review the 1998-99 climate and assess corresponding climate predictions; discuss prediction and diagnosis of monthly, seasonal, interdecadal, and decadal phenomena such as El Niño; examine the links between extreme events and climate variability; and consider weather/climate/hydrology issues relevant to the western U.S. The workshop will include a special session on the relationship between climate variability and human health. More information is available from the Climate Prediction Center, W/NP51, NOAA Science Center, 5200 Auth Road, Camp Springs, MD 20746; (301) 763-8000, ext. 7515; fax: (301) 763-8395; e-mail: cdwshop@ncep.noaa.gov; WWW: <http://www.cpc.ncep.noaa.gov/events/cdw99/index.html>.

NATO Advanced Studies Institute: "Coping with Flash Floods." Ravello, Italy: November 8-18, 1999. With urbanization and increased population in hazardous places, vulnerability to flash flooding is increasing. Since 1992 there have been serious flash floods in both Europe and the United States involving the loss of scores of lives. Still, recent scientific advancements in and collaboration among meteorology, hydrology, and social science have presented new opportunities to improve flash flood forecasting and mitigation.

In 1992 a NATO-sponsored Advanced Studies Institute took place in Erice, Italy. The book reporting the papers and findings (*Coping with Floods*, edited by G. Rossi, N. Harman-cioglu, and V. Yevjevich, 1994) provides a solid understanding of how technology can be applied to reduce flood losses. The 1992 meeting included discussions of how flash floods present a particular set of problems and opportunities, and this 1999 institute will focus in depth on the issues first examined there. The meeting will include engineers, geographers, hydrologists, meteorologists, emergency managers, geographers, social scientists, and others who address the challenges of reducing flash flood vulnerability. After presentations surveying this field, the attendees will divide into groups to formulate a new research agenda and determine the best ways to learn from and apply current scientific and technological advancements. For details, see <http://web.uccs.edu/Geogenvs/NATOASI> or contact Eve Grunfest, Department of Geography, 1420 Austin Bluffs Parkway, University of Colorado-Colorado Springs, P.O. Box 7150, Colorado Springs, CO 80933-7150; (719) 262-4058; fax: (719) 262-3019; e-mail: ecg@brain.uccs.edu.

2000 North American Snow Conference. Sponsor: American Public Works Association (APWA). Traverse City, Michigan: April 9-12, 2000. The North American Snow Conference showcases the latest developments and strategies for meeting the challenges of winter weather. Education sessions offer practical and timely information for public works officials. The organizers are currently soliciting presentation proposals, and abstracts are due August 15, 1999. Submission proposal forms are available from the APWA Web site: <http://www.apwa.net>. Completed forms should be e-mailed to mfrancis@apwa.net. For more information about this meeting, contact Matt Francis, American Public Works Association, Education Department, Suite 500, 2345 Grand Boulevard, Kansas City, MO 64108-2641; (816) 472-6100; e-mail: mfrancis@apwa.net; WWW: <http://www.apwa.net>.

Eighth International Conference on Emergency Medicine: Emergency Medicine in the Third Millennium. Presented by: The International Federation of Emergency Medicine. Boston, Massachusetts: May 4-7, 2000. This meeting includes an entire track on disaster medicine, as well as 16 other educational program paths. A call for papers has been issued; abstracts are due November 1, 1999. More information and a conference brochure are available from the American College of Emergency Physicians, P.O. Box 619911, Dallas, TX 75261-9911; (800) 798-1822 or (972) 550-0911; fax: (972) 580-2816; e-mail: edmeetings@acep.org; WWW: <http://www.acep.org/meetings>.

The Extremes of the Extremes: An International Symposium on Extraordinary Floods. Sponsors: Iceland Hydrological Service, International Association of Hydrological Sciences, and others. Reykjavik, Iceland: July 17-19, 2000. This symposium will examine extraordinary floods, with an emphasis on events in mountain regions and extreme climate zones. The focus will be on the interactive roles of snow, ice, and other hydrological and meteorological forces in generating such phenomena; volcanism and other geothermal processes; and landslide-related events. Participants will examine not only the physical processes involved, but also prediction and forecasting, frequency estimation, case studies, and environmental consequences of extreme floods. Abstracts are due October 31, 1999. For specifics, contact A. Snorrason, Grensasvegur 9, IS-108 Reykjavik, Iceland; tel: +354 569-6000; fax: +354 568-8896; e-mail: asn@os.is; WWW: <http://www.os.is/vatnam/extremes2000>.

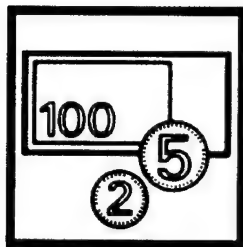
International Workshop on Development and Management of Flood Plains and Wetlands. Organizer: International Research and Training Center on Erosion and Sedimentation (IRTCES).

Sponsor: International Hydrological Program (IHP). Beijing, China: September 5-8, 2000. Cultivation of floodplains and reclamation of wetlands are not new. However, 20th century population and economic growth has led to widespread development of these areas for human uses. In China, for example, the population in the flood-retention areas of the Middle Yangtze River Basin exceeds five million, and the floodplain between the two levees of the Lower Yangtze River Basin hosts a population of over 1.7 million. The people in these areas are at great risk during flood seasons. At the same time, the pressure on wetlands due to increased population and development has led to their loss or ecological degradation. To address these issues, IRTCES has organized this workshop, the main topics of which will be interaction between river systems, floodplains, and wetlands; hydrology, floods, and disaster reduction; ecology and environment of wetlands and floodplains; the effects of socioeconomic development on these regions; floodplain and wetland planning; wetland protection; floodplain and wetland management; and case studies. The organizers have issued a call for papers with abstracts due November 30, 1999. The conference will be conducted in English. For a conference flyer and details about abstract submission, contact Jiang Chao, IWWF 2000, IRTCES, P.O. Box 366, Beijing 100044, China; tel: +86-10-68413372; fax: +86-10-68411174; e-mail: irtces@public.east.cn.net.

Mid-America Post-Earthquake Highway Response and Recovery Conference. Sponsors: Federal Highway Administration (FHWA), Missouri Department of Transportation, Missouri State Emergency Management Agency, Mid-America Earthquake Center, and the Central United States Earthquake Consortium. St. Louis, Missouri: September 5-8, 2000. In mid-America, much of the private and public infrastructure, including highways, was not built with earthquakes in mind, despite the risks posed by the New Madrid Seismic Zone and other seismic hazards. This conference is intended to assist mid-America state and local highway agencies in understanding the possible consequences of a significant regional earthquake. Possible topics include: earthquake impacts; planning and developing earthquake-resistant emergency access routes; response planning and recovery preparation; interagency coordination; employee preparation, safety, and other personnel issues; inspection of bridges and other structures; highway system assessment and traffic management; debris removal; communications; public and media relations; contracting of services; and funding. For more information, contact Donald Neumann, FHWA, 209 Adams, Jefferson City, MO 65101; (573) 636-6196, ext. 17; e-mail: donald.neumann@fhwa.dot.gov.

ASFPM Now Offering Floodplain Manager Certification

The Association of State Floodplain Managers (ASFPM) recently announced that it is offering national professional certification of floodplain managers. This program, the result of several years of careful planning by the association, will recognize ASFPM members who demonstrate the requisite training, education, and experience, and who pass a floodplain management test. For more information, application materials, and a study guide, contact ASFPM, 4233 West Beltline Highway, Madison, WI 53711; (608) 274-0123; fax: (608) 274-0696; e-mail: asfpm@floods.org; WWW: <http://www.floods.org>.



CONTRACTS AND GRANTS

Risky Choices in Social and Cultural Contexts. Funding agency: National Science Foundation, \$117,679, 36 months. Principal Investigator: *X.T. Wang, University of South Dakota, Vermillion, SD 57069; e-mail: xtwang@usd.edu.*

Decisions on alternative options often involve risks and uncertainties. Should we buy flood insurance or would we rather save the money? Do we prefer a high-risk or a low-risk stock market investment? Do we choose surgery or chemotherapy? This research project examines how people automatically search, select, and use social and communicational cues under real-world constraints to determine their risk behavior. Previous research has shown that people are sensitive to kinship, anonymity, group size and constitution, and phrasing of choice options. This study will test responses to choices between options, such as life versus money, with different expected values, different payoffs, different samples of participants, different task conditions, under both positive and negative framing, and cross-culturally.

Public Perception of Risk and Risk Management. Funding agency: National Science Foundation, \$121,389, 12 months. Principal Investigators: *James H. Flynn and Paul Slovic, Decision Sciences Research Institute, 1201 Oak Street, Eugene, OR 97401-3519; (503) 485-2400; e-mail: jfflynn@decisionresearch.org.*

Differences in perception of risk between the public and experts has resulted in numerous controversies. This project will study the way attitudes toward risks and their management are formed as well as their implications for addressing risk controversies. It will develop a framework to understand different approaches to risk and preferences for risk management options in order to inform risk communication, risk management, and public policy and provide new approaches for public decision making.

Public Perception of Y2K Risks. Funding agency: National Science Foundation: \$56,896, 12 months. Principal Investigator: *Donald MacGregor, Decision Science Research Institute, 1201 Oak Street, Eugene, OR 97401-3519; (503) 485-2400; e-mail: pslovic2@oregon.uoregon.edu.*

As the world approaches the change of the millennium, public interest is focusing on the possible consequences of computer failures. Because many technical experts cannot predict what problems may occur, the public can only conclude that the problem is not completely understood and that solutions have not been achieved. These researchers will conduct a series of surveys during 1999 to gather data on public perceptions of Y2K risks based on current research on risk perception, communication, and risk management. The Y2K event poses a unique opportunity to examine how perceptions of risk evolve in response to social processes.

Public Perceptions and Constructions of the Y2K Problem. Funding agency: National Science Foundation: \$49,803, 12

months. Principal Investigator: *Bruce V. Lewenstein, Cornell University, Department of Communication, 321 Kennedy Hall, Ithaca, NY 14853-2801; (607) 255-8310 or (607) 255-6501; fax: (607) 254-1322; e-mail: bvl1@cornell.edu; WWW: <http://www.people.cornell.edu/pages/bvl1/>.*

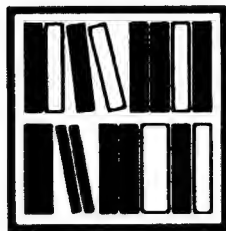
This project will use new technology to gather an archive of 1999 television clips mentioning the Y2K problem. The researchers believe that Y2K provides a unique window into public perception of technology and its implications for modern daily life. They will download cable-television signals, scan the close-captioning of texts for mention of Y2K, and archive those segments that refer to it. The resultant archive will be available to scholars interested in researching the social science aspects of this phenomenon.

Digital Government: Digitalization of Coastal Management and Decision-Making Supported by Multi-Dimensional Geospatial Information and Analysis. Funding agency: National Science Foundation, \$40,000, 12 months. Principal Investigators: *Rongxing Li, J.R. Ramirez, C.K. Shum, and Keith W. Bedford, Ohio State University, Civil & Environmental Engineering and Geodetic Science, 470 Hitchcock Hall, 2070 Neil Avenue, Columbus, OH 43210; (614) 292-6946; fax: (614) 292-2957; e-mail: li.282@osu.edu; WWW: <http://shoreline.eng.ohio-state.edu/research/IKONOS/index.html>.*

With continuing population and economic growth in coastal areas, maintaining a sustainable environment becomes more difficult. At the same time, global warming, climate change, coastal erosion, and pollution are increasing problems. To deal with these issues, geospatial information and analysis can be used to survey and map shorelines, detect change, mitigate natural hazards, and coordinate policies related to coastal resource management. This grant will support a workshop and other activities to develop a research plan for enhancing government capabilities in coastal resource management and related decision making.

Climate Change and a Global City: An Assessment of the Metropolitan East Coast Region. Funding agency: National Science Foundation, \$425,000, 18 months. Principal Investigator: *Cynthia Rosenzweig, Columbia University, Center for Climate Systems Research, 2880 Broadway, Armstrong Hall 630, Mail Code 0206, New York, NY 10027; e-mail: crosenzweig@giss.nasa.gov.*

This project will assess the potential climate change impacts on New York City and its environs; it is a regional component of the ongoing U.S. National Assessment on the Potential Consequences of Climate Variability and Change. It will focus on impacts to human health, water facilities, and infrastructure; coastal inundation; and community interaction and outreach needs. A number of databases will be developed to support future decision making in the metropolitan area.



RECENT PUBLICATIONS

All Hazards

"Women and Disasters." *International Journal of Mass Emergencies and Disasters*, Vol. 17, No. 1 (March 1999). Betty Hearn Morrow and Brenda D. Phillips, Guest Editors. Subscriptions: \$48.00, institutions; \$35.00, individuals. Single issues can be purchased for \$15.00. To subscribe, contact Brenda Phillips, Women's Studies Program, Department of Sociology and Social Work, P.O. Box 425557, Texas Woman's University, Denton, TX 76204; fax: (940) 898-2101; e-mail: f_phillips@twu.edu.

This special issue of the *International Journal of Mass Emergencies and Disasters* begins by asking the question, "What's gender got to do with it?" Disaster researchers are accumulating clear evidence that, as a group, women are likely to respond to, experience, and be affected by disasters different than men. This issue contains articles that examine gender and social class in disaster, women and housing issues in the U.S., risk factors for psychological morbidity, woman battering following the Grand Forks flood disaster, elderly female-headed households and the disaster loan process, women and local emergency management, and women working in traditionally male emergency response roles.

Space Technology Applications for Natural Disaster Mitigation. *Proceedings of the First United Nations and JUSTSAP [Japan-U.S. Science, Technology, and Space Applications Program] Joint Symposium on Space Technology Applications for Natural Disaster, 4-5 November 1997, Hawaii, USA. UNCRD Proceedings Series No. 28. 1998. 103 pp. \$20.00, plus \$4.00 shipping. Copies can be ordered from the United Nations Centre for Regional Development (UNCRD), Publication and Information Management Office, Nagono 1-47-1, Nakamura-ku, Nagoya 450, Japan; tel: (+81-52) 561-9379; fax: (+81-52) 561-9458; e-mail: info@uncrd.or.jp; WWW: <http://www.uncrd.or.jp>.*

This volume contains the proceedings of a symposium exploring the use of space technology for observing damage and mitigating impacts of earthquakes, hurricanes, tornadoes, floods, volcanic eruptions, and other natural disasters. It contains papers on coordinated international satellite applications for disaster management, wildfire and haze disaster management in Indonesia, disaster management and international cooperation, remote sensing and volcanic and earthquake disaster mitigation in the Philippines, search and rescue applications, mitigation and emergency manage-

ment using satellites, and a global disaster observation satellite system.

Update. *Geography Education Outreach No. 41 (Spring 1999).* Free. Available by request from the National Geographic Society, Geography Education Outreach, P.O. Box 90190, Washington, DC 20090-8190; (202) 775-6701; e-mail: gep@ngs.org; WWW: <http://www.nationalgeographic.com/education/gep.html>.

This newsletter is part of an effort by the National Geographic Society to "put geography back in the nation's classrooms." It supports a network of educators interested in improving their teaching about geography and offers professional development, materials, training, and grant opportunities. This issue of *Update* is primarily devoted to teaching about natural hazards. Most notably, it outlines a natural hazards lesson plan for grades five through eight about earthquakes and tsunamis, volcanoes, hurricanes and tornadoes, hailstorms and drought, human settlement and natural hazards, and disaster response planning. It includes an exercise on conducting a city council meeting that incorporates differing views about land use at the local level. It also lists World Wide Web sites that provide further information.

Emergency Response Planning for Corporate and Municipal Managers. Paul A. Erickson. 1999. 564 pp. \$79.95. To order, contact Academic Press, Inc., Order Fulfillment Department, 6277 Sea Harbor Drive, Orlando, FL 32887; (800) 321-5068; fax: (800) 874-6418; e-mail: apbcs@harcourtbrace.com; WWW: <http://www.apcatalog.com>.

Effective emergency response planning demands both persistent and consistent liaison and coordination among governmental agencies, response organizations, and community support resources. Bearing that in mind, this book was written for corporate and municipal managers who must learn their roles in emergency management, as well as graduate and undergraduate students for classes and programs devoted to emergency planning and response. It describes the scope of emergency response, elements of holistic planning and management, the creation of an emergency response plan, the incident command system, physical and chemical hazards, biohazards, medical surveillance, personnel training, hazard reduction strategies, decontamination, data and information management, monitoring strategies and devices, and dealing with terrorism. Numerous appendices provide emergency management definitions and information on the Federal Emergency Management

Agency and the Occupational Safety and Health Administration, resources to deal with terrorism, the National Fire Academy and Emergency Management Institute, emergency procedures for employees with disabilities, and workplace preparation for emergencies.

Sitting in the Hot Seat: Leaders and Teams for Critical Incident Management. Rhona Flin. 1996. 258 pp. \$55.00, plus \$2.50 shipping. Copies can be ordered from John Wiley & Sons, Inc., Distribution Center, 1 Wiley Drive, Somerset, NJ 08875-1272; (732) 469-4400; fax: (732) 302-2300; e-mail: catalog@wiley.com; WWW: <http://www.wiley.com>.

Sitting in the Hot Seat examines the role of the on-scene commander dealing with an event with life-threatening potential, such as a fire or explosion, or a major incident involving all emergency services, such as a natural disaster. Based on her study of emergency management professionals in the U.K. offshore oil and gas fields, Flin developed this volume to be a standard reference for incident command in the U.K. She describes the role of the incident commander, outlines selection criteria for hiring one, and details important training requirements. She follows with discussions on the stress of incident command, decision making within this structure, the role of incident command teams, and possible future developments.

Handbook on Natural Disaster Reduction in Tourist Areas. 1998. 129 pp. \$30.00, plus \$5.00 shipping. Available from Maria Jos Martinez, World Tourism Organization, Calle Capitan Haya, 42, 28020 Madrid, Spain; tel: ++34 91 5678 113; fax: ++34 91 571 37 33; WWW: <http://www.world-tourism.org>.

The World Tourism Organization (WTO) is the only inter-governmental organization that serves as a global forum for tourism policy and issues. With tourism now an important global phenomenon involving the movement of individuals to virtually all countries, this worldwide industry is certainly vulnerable to natural disasters. Recognizing this, the World Meteorological Organization (WMO) and the WTO worked together to study natural disaster reduction in tourism areas as a contribution to the International Decade for Natural Disaster Reduction. Noting that many tourist destinations are often located in areas exposed to sudden-onset natural disasters, WMO and WTO published this handbook to demonstrate to tourism planners, tour operators, resort operators, and others involved in this industry how risks can be reduced and their impacts mitigated. It addresses tropical cyclones, storm surge, flooding, avalanches, earthquakes, emergency preparedness, and postdisaster "relaunching" (recovery). Appendices include guides for resort managers, tourists, and families; a section on marketing and press relations during the recovery phase; and a sample damage assessment report.

***Canadian Journal of Emergency Management*, Vol. 1, No. 1 (May/June 1999).** Subscriptions in Canada: \$32.10 (Canadian) for one year, \$53.50 for two. Subscriptions in the U.S.: \$50.00 (Canadian) for one year; \$70.00 for two. To subscribe, contact the *Canadian Journal of Emergency Management*, P.O. Box 68042, Crowfoot RPO, Calgary, Alberta, Canada T3G 3N8; (800) 567-0911 or (403) 547-5748; fax: (403) 547-5749; e-mail: cjem@emsnews.com.

The mission of the *Canadian Journal of Emergency Management* is "to provide emergency planners and disaster responders from all walks of life with a forum for dialogue and a resource guide on a cross-section of topics relating to emergency management in Canada." The publishers want to facilitate "user-friendly, pragmatic, and hands-on discussion" about the many issues affecting emergency management. At the base of that effort is the belief that effective disaster response requires a multiorganizational and multijurisdictional effort with quality communication, decision making, and coordination. This inaugural issue contains articles

about public information issues during the Winnipeg flood of 1997 (the same Red River flood that devastated Grand Forks, North Dakota); crisis communication; emergency management issues arising from the creation of two new Canadian territories; the role of emergency medical services in disasters; the crash of Swissair Flight 111 in Nova Scotia; search and rescue; the ice storm of 1998; and Y2K problems.

Children and Disasters. Norma S. Gordon, Norman L. Farberow, and Carl A. Maida. 1999. 192 pp. \$29.95, plus \$2.50 shipping. To purchase a copy, contact Taylor & Francis, Inc., 47 Runway Road, Levittown, PA 19057; (800) 821-8312; fax: (215) 269-0400; e-mail: bkorders@tandfpa.com; WWW: <http://www.taylorandfrancis.com>.

When disasters strike, survivors suddenly find themselves in a world that has become confusing and unfamiliar. Such traumatic events impose severe psychological strain on every member of a community, but children are particularly vulnerable. This book examines the impact of major disasters on the mental health of children and describes early intervention for children and families stressed by catastrophic events. The book is intended to enhance the skills of mental health professionals, educators, and peer counselors. The interventions presented reinforce the legitimacy of the anxieties and fears children and their families face and encourage the expression of feelings in group and individual settings. This model can be used in programs for individuals, families, multi-family groups, and in even broader settings. *Children and Disasters* provides perspectives on disaster, describes program design and training issues, explains children's reactions to disasters, and outlines a crisis intervention approach.

Report and Commentary on Pre-Disaster Mitigation. Volume 2. 1999. 129 pp. Free. Copies of this report can be obtained from the FEMA Publications Distribution Facility, P.O. Box 2012, Jessup, MD 20794-2012; (800) 480-2520.

In 1997, Congress provided \$30 million for predisaster mitigation, but at the same time, called for a formal needs-based analysis and cost/benefit study of various mitigation alternatives, with the results to be incorporated into a comprehensive, long-term National Pre-Disaster Mitigation Plan. Congress wanted this analysis to be independently reviewed and submitted to the House Committee on Appropriations, and that report was recently made available by FEMA (see the *Observer*, Vol. XXIII, No. 2, p. 11). This second volume offers supplementary materials that provide an in-depth understanding of the panel's review process. It is divided into three sections that contain documents from each of the three meetings held by the panel. These materials are followed by a bibliography of other materials reviewed by panel members, including supplementary readings mailed to members prior to meetings, handout materials made available by and for panel members at each meeting, and materials included in participant folders for use at the meetings.

Climate Change and Extreme Weather

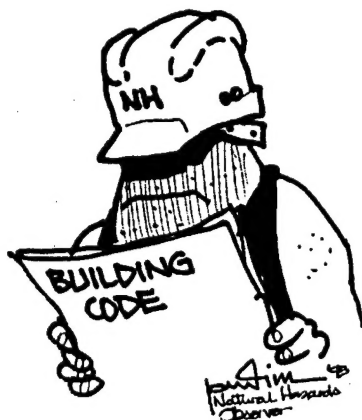
Making Climate Forecasts Matter. Paul C. Stern and William E. Easterling, Editors. 1999. 192 pp. \$34.00, mailed orders; \$27.20, on-line orders. Copies can be purchased from the National Academy Press, 2101 Constitution Avenue, N.W., Lockbox 285, Washington, DC 20055; (888) 624-8373 or (202) 334-3313; fax: (202) 334-2451; e-mail: amerchan@nas.edu; WWW: <http://www.nap.edu>.

El Niño has been with us for centuries, but now we can forecast it and thus prepare far in advance for the extreme climatic events it brings. The emerging ability to forecast climate may be of tremendous value to humanity if we learn how to use the information well. How does society cope with climatic variations? How have climate forecasts been used, and how useful have they been?

What kinds of forecast information are needed? Who is likely to benefit from forecasting skill? What are the benefits of better forecasting? This report by the National Research Council's Panel on the Human Dimensions of Seasonal-to-Interannual Climate Variability, Committee on the Human Dimensions of Global Climate Change, reviews what we know about these and other questions and identifies research needed to help us create useful climate forecasts. It explores the vulnerability of human activities to climate, the state of climate prediction science, the coevolution of societies with their climates, the effective dissemination of climate information, and the use of forecasting to better manage the human consequences of climate change.

Extreme Weather Events: The Health and Economic Consequences of the 1997/98 El Niño and La Niña. Paul R. Epstein, Editor. The complete text of the report, as well as the database from which it was generated, are available from the Center for Health and the Global Environment, Harvard Medical School: WWW: <http://chge2.med.harvard.edu/enso/disease.html>.

Extreme weather events often produce conditions conducive to outbreaks of infectious diseases. The upsurge of insect, rodent, and water-borne diseases following Hurricane Mitch in Central America in October 1998 highlights this connection. The 1997/98 El Niño-related weather events spawned clusters of outbreaks of malaria, Rift Valley fever, cholera, and dengue fever. Prolonged wildfires in other regions caused widespread respiratory illnesses and significant losses of wildlife. These incidents also generated substantial economic losses and loss of life. The 1998 La Niña continued the pattern of extreme weather, spawning widespread flooding, Hurricane Mitch, a cold wave across Europe, and a crippling ice storm in the southern U.S. This report describes these events, tying them to disease outbreaks, and discusses the link between meteorological conditions and disease transmission. It contains regional studies of Latin America, the Asia-Pacific region, North America, and Africa; a report on the impacts of Hurricane Mitch; a survey of the costs of these events, a discussion of marine mammal strandings and mortalities; a review of the impacts of human activity on global climate; and recommendations for monitoring, early warning systems, and environmental and energy policies.



Recommendations for the Mitigation of Tornado Induced Damages on Masonry Structures. Sean O'Neill and Jean-Paul Pinelli. Research Report No. 1998-1. 1998. 177 pp. \$15.00. Purchase from the Florida Institute of Technology, Wind and Hurricane Impact Research Laboratory, Attn: Jean-Paul Pinelli, 150 West University Boulevard, Melbourne, FL 32901-6988; (407) 674-8085; WWW: <http://www.fit.edu/research/whirl>.

Most tornado-induced damage to masonry buildings is caused by the failure of a limited number of critical structural and nonstructural elements, which usually take place at wind speeds for

which economic structural design is possible. Considering that maximum tornado wind speeds occur over only a very small portion of the total storm path, designing for a wind speed of 150 mph would be adequate to mitigate over 99% of all tornado damage in the state of Florida. Despite this, most individuals involved in the construction and engineering industries share the common misconception that it is futile to design and construct buildings to withstand tornado forces. This report identifies the critical structural elements that commonly fail in masonry structures and recommends affordable mitigation measures. It includes three case studies of building failures with analyses of the costs and benefits of proposed mitigation measures.

Is Your Home Protected from Hail Damage? A Homeowner's Guide to Roofing and Hail. 1999. 14 pp. \$4.00, Institute for Business and Home Safety (IBHS) members; \$8.00, nonmembers. Available from IBHS, Information Center, 175 Federal Street, Suite 500, Boston, MA 02110-2222; (617) 292-2003; fax: (617) 292-2022; WWW: <http://www.ibhs.org>.

Hail damage is a major cause of financial loss for both homeowners and insurers; each year repairs cost hundreds of millions of dollars. Homeowners usually replace hail-damaged roof coverings with the same or similar damage-prone products. In an effort to break this cycle, IBHS has produced this booklet to educate homeowners and builders about the most effective impact-resistant roof coverings. It describes the types of roof coverings available and the selection of a contractor, and responds to commonly asked questions. It also contains a list of roofing terms and additional sources of information.

Hurricanes

Building Performance Assessment Report: Hurricane Georges in the Gulf Coast . . . Building on Success—Observations, Recommendations, and Technical Guidance. FEMA 338. 1999. 110 pp. Free.

Building Performance Assessment Report: Hurricane Georges in Puerto Rico—Observations, Recommendations, and Technical Guidance. FEMA 339. 1999. 121 pp. Free.

Both reports can be requested from the Federal Emergency Management Agency (FEMA), Publications Distribution Facility, P.O. Box 2012, Jessup, MD 20794-2012; (800) 480-2520.

When a hurricane, flood, earthquake, or other disaster occurs, FEMA often sends teams of technical experts to inspect disaster-induced damage to structures and evaluate local building practices. These teams, called Building Performance Assessment Teams (BPATs), evaluate local design practices, construction methods and materials, building codes, and inspection and code enforcement practices. These two reports are the latest products from this program. The first looks at the impacts of Hurricane Georges on Mississippi, Alabama, and Florida. In this assessment, the BPAT focused on the effectiveness of flood- and wind-hazard mitigation initiatives undertaken before the hurricane, siting and other planning issues and their contribution to building success or failure, floodplain management issues, and shoreline impacts. The second report focuses on the storm's impacts in Puerto Rico, where the BPAT looked primarily at the performance of single-family residential homes. The team also documented impacts on commercial buildings and essential facilities. Both reports contain BPAT conclusions and recommendations.

Epidemiological Bulletin of the Pan American Health Organization, Vol. 19, No. 4 (December 1998). Free. Copies are available from the Pan American Health Organization (PAHO), Pan American Sanitary Bureau, Regional Office of the World Health Organization, 525 Twenty-Third Street, N.W., Washington, DC 20037; <http://www.paho.org>.

This issue of *Epidemiological Bulletin* is devoted entirely to the impacts of Hurricane Mitch on Central America. At the time the hurricane struck, the region was just recovering from the effects of the 1997-1998 El Niño, whose floods, forest fires, and droughts had weakened Central American countries' agriculture and commerce. The bulletin provides detailed information about the number of lives lost, missing people, injured, dwellings damaged, and critical buildings and structures damaged in Honduras, Nicaragua, El Salvador, Guatemala, Belize, and Costa Rica. It also describes the health impacts on each country, and discusses infectious diseases, food availability and consumption, food aid, impacts on basic sanitation, and resources provided by PAHO and others. A table that summarizes rehabilitation and reconstruction needs, and their costs, is also provided.

Landslides and Avalanches

"The Liquid Earth," Atlantic Monthly, Vol. 283, No. 1 (January 1999). Brenda Bell. Annual subscriptions, \$12.95. Subscriptions can be obtained from the Atlantic Subscription Processing Center, Box 52661, Boulder, CO 80322. Reprints can be obtained from Reprint Management Services, (717) 560-2001. On-line information and subscriptions can also be obtained at <http://www.theatlantic.com>.

According to Brenda Bell, landslides and other ground failures cost more lives and money each year than all other natural disasters combined, and their incidence seems to be rising. Yet, all levels of government in the U.S. devote few resources to the study of this hazard, while individuals continue to build and live in places that will likely be consumed one day in an avalanche of mud. In this article, Bell describes a recent deadly landslide that her daughter narrowly avoided; discusses increasing development in hazardous areas throughout the U.S.; characterizes differing types of ground failures and the difficulties in predicting them; and examines the difficulties experienced by all levels of government, which are caught between trying to restrict building in dangerous areas, preserving private property rights, and bearing the costs of supporting the relative few who live in these unsafe areas.

Partner Research: Avalanches in the European Alps, February 1999. 12 pp. Free. Copies can be requested from PartnerRe Services, Weinplatz 10, CH-8022, Zurich, Switzerland; (41 1) 224-3535; fax: (41 1) 224-3500; e-mail: aller@partnerre.com.

In February, heavy winter storms swept through Europe, causing deadly avalanches in many parts of the Alps. Austria, France, and Switzerland, where thousands of vacationers were trapped due to closed roads, were most severely affected. Property damage was extensive. This report focuses on the most devastating of the avalanches and the losses incurred. In addition, it describes the avalanche phenomenon and compares the events of 1999 with other years. It provides information on related damage caused by heavy snow loads, landslides, and floods; describes insurance exposures, such as property loss, business interruption, liability, and personal accidents; explains the major types of avalanches; and discusses avalanche protection measures, such as hazard mapping, forecasting, and slope stabilization.

Earthquakes

Lessons Learned Over Time. 1999. 110 pp. \$15.00, plus \$5.00 shipping. California residents, add 8¼% sales tax. Copies can be purchased from the Earthquake Engineering Research Institute (EERI), 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: eeri@eeri.org; WWW: <http://www.eeri.org>.

This volume is the first in a news series of publications by EERI to capture and disseminate lessons that may not become apparent until some years after an earthquake. It contains three

retrospectives of past earthquakes. The first, "Earthquake as Opportunity: The Reconstruction of Pacific Garden Mall, Santa Cruz, After the Loma Prieta Earthquake of 1989," by Christopher Arnold, evaluates the public-planning process undertaken to rebuild several city blocks. The second, "Empowering Local Governments in Disaster Recovery Management: Lessons from Watsonville and Oakland in Recovering from the 1989 Loma Prieta Earthquake and Other Recent Disasters," by Laurie A. Johnson, evaluates recovery efforts conducted by two northern California cities. Finally, "Re-examining the Performance of Roll-Up Garage Doors in Fire Stations in Recent California Earthquakes," by Fred Turner, surveys fire district experiences with this problem since 1971 and concludes that significant delays in response to fires after quakes are due to malfunctioning doors.

MCEER Looks at Earthquakes and Critical Elements

The Natural Hazards Center recently received three new publications that examine the impacts of earthquakes on critical equipment, telecommunications, and highway bridges, all from the Multidisciplinary Center for Earthquake Engineering Research (MCEER), located at the State University of New York at Buffalo (see the *Observer*, Vol. XXIII, No. 5, p. 4).

The first report, *Appropriate Seismic Reliability for Critical Equipment Systems—Recommendations Based on Regional Analysis of Financial and Life Loss*, by K. Porter, C. Scawthorn, C. Taylor, and N. Blais (Publication No. 98-016, 1998, 104 pp., \$25.00), recommends a minimum seismic reliability level for critical equipment systems in facilities vulnerable to earthquakes. It describes a method for achieving cost-effective risk mitigation and applies it to a test case involving an automatic sprinkler system in a high-risk building. The study provides guidelines for identifying equipment systems necessary for both normal operation and for life safety.

Proceedings of a Workshop on Performance Criteria for Telecommunication Services Under Earthquake Conditions, edited by Anshel J. Schiff (Publication No. 98-008, 1998, 127 pp., \$24.00), documents part of a federal effort to develop seismic guidelines for lifelines. A meeting was held to identify key issues related to the performance of communication systems and suggest performance criteria. Papers in this proceedings volume examine such criteria, congestion of systems and networks, emergency power for communications systems, connectivity during emergencies, telecommunications emergency operations by Pacific Bell, and the standardized emergency management system in California.

Methodologies for Evaluating the Importance of Highway Bridges, by A. Thomas, S. Eshenaur, and J. Kulicki (Publication No. 98-002, 1998, 182 pp., \$30.00), stresses that the location of a structure and its seismic vulnerability, along with its importance, are factors that should be used in determining what seismic design or level of seismic retrofit should be used on that structure. The volume will be useful for those who must make decisions about allocating resources for the seismic design or retrofit of bridges.

All three documents can be purchased from MCEER, State University of New York at Buffalo, 107 Red Jacket Quadrangle, Buffalo, NY 14261; (716) 645-3391; fax: (716) 645-3399; e-mail: mceer@acsu.buffalo.edu; WWW: <http://mceer.buffalo.edu>.

On Shaky Ground: The New Madrid Earthquakes of 1811-1812. Norma Hayes Bagnall. 1996. 128 pp. \$9.95, plus \$4.00 shipping. Copies can be purchased from the University of Missouri Press, 2910 LeMone Boulevard, Columbia, MO 65201; (800) 828-1894; fax: (573) 884-4498; e-mail: orders@umsystem.edu; WWW: <http://www.system.missouri.edu/upress/>.

The tremors that shook the Mississippi Valley in southeast Missouri from December 16, 1811, through February 7, 1812, were among the most violent quakes ever to hit North America in recorded history. Known as the New Madrid quakes, these temblors affected more than one million square miles. Scientists have estimated that three of the greatest of the tremors had magnitudes of greater than 8.0, and vibrations were felt from the Rocky Mountains to the Atlantic Coast and from Mexico to Canada. *On Shaky Ground* provides eyewitness accounts from those who experienced the quakes. It traces the history of the founding of the town of New Madrid, Missouri, and considers the impact of the quakes on people and land in the region. It also describes scientific probabilities for future seismic events and provides instructions on preparing for and surviving a quake.

Tsunamis

Strategic Implementation Plan for Tsunami Mitigation Projects. L. Dengler. NTIS Order No. PB99-115552INZ. 1998. 148 pp. \$36.00, paper; \$17.00, microfiche; plus \$5.00 shipping. To purchase a copy, contact the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161; (800) 553-6847; fax: (703) 321-8547.

The National Tsunami Hazard Mitigation Program is a partnership among federal agencies and states to reduce risks from tsunamis. Participants in this program, including the National Oceanic and Atmospheric Administration (NOAA), the U.S. Geological Survey (USGS), the Federal Emergency Management Agency (FEMA), and the states of Alaska, California, Hawaii, Oregon, and Washington, work together to assess tsunami hazards, facilitate communication of hazard information, improve early detection of tsunamigenic earthquakes, reduce false tsunami alarms,

and support mitigation. This plan defines and prioritizes methods for coordinating mitigation efforts. It addresses five planning areas: education; tools for emergency managers; construction, abatement, and land-use guidance; information exchange and coordination; and long-term tsunami mitigation.

Y2K

Year 2000 Computing Crisis: Readiness of the Oil and Gas Industries. Report to the Special Committee on the Year 2000 Technology Problem, U.S. Senate. Report No. GAO/AIMD-99-162. 1999. 47 pp. Free. Copies can be requested from the General Accounting Office (GAO), P.O. Box 37050; Washington, DC 20013; (202) 512-6000; fax: (202) 512-6061; e-mail: info@www.gao.gov. The complete report is also available on-line at <http://www.gao.gov>.

One of the biggest concerns of emergency managers in planning for the changeover to the new millennium is the reliability of energy supplies. Many planning scenarios for global computer failure depict widespread power failures for days or weeks. This report identifies for Congress the vulnerability of the oil and gas industries to Year 2000 (Y2K) problems, as well as their readiness. Noting that all phases of operations in the oil and gas industries are subject to Y2K failures, the GAO reports that domestic companies have made substantial progress in making their equipment and systems able to continue operations, although some risks remain. In February 1999, following an industry-wide survey of oil and gas companies in the U.S., the GAO found that 40% were finished with preparations, while over a quarter did not expect to be Y2K compliant until the second half of 1999—leaving little time to resolve unexpected problems. In addition, the GAO expressed concern about the lack of knowledge of Y2K readiness of foreign oil, which provides over half of the oil used in the United States. Moreover, while individual American companies report that they are developing Y2K contingency plans, there are no plans by the industry as a whole to perform a national risk assessment and develop contingency plans to deal with potential shortages or disruptions in the nation's overall oil and gas supply.

Electronic Stuff

Probabilities of Temperature Extremes in the U.S. Version 1. CD-ROM. 1999. \$130.00. To obtain a copy, contact the NOAA National Data Centers, 151 Patton Avenue, Asheville, NC 28801-5001; (828) 272-4800; fax: (828) 271-4876; e-mail: nndcorders@nndc.noaa.gov; WWW: <http://www4.ncdc.noaa.gov>.

Whenever a location experiences an extreme temperature event, such as a heat wave or cold snap, many people want to know how unusual the temperature is. This CD-ROM allows a person to estimate temperature probabilities for 332 locations in the U.S., given a monthly forecast of above- or below-normal temperatures, or even alternate climate change scenarios. Users can determine the probability that an extreme temperature will occur for one or more consecutive days and/or for any number of days in a given month or season. They can choose a station or stations of interest, select the temperature parameters and dates of interest, and graph the probabilities. The program requires Windows 95/98 or Windows NT, 22MB hard disk space, and a 486 MHz or higher model computer.

International Bibliography of Wildland Fire. CD-ROM. 1999. \$50.00. To purchase, contact the International Association of Wildland Fire (IAWF), East 8109 Bratt Road, Fairfield, WA 99012; (509) 523-4003; fax: (509) 523-5001; e-mail: greenlee@cet.com; WWW: <http://www.wildfiremagazine.com>.

This wildland fire bibliography contains 60,000 citations dealing with all aspects of fire. Maintained by the IAWF through cooperation with dozens of libraries and fire researchers throughout the world, the citations are organized alphabetically by author and also list title, source, date, and keywords. If available, an abstract is also provided. The bibliography is fully updated quarterly.



THE HAZARDS CENTER

The NATURAL HAZARDS RESEARCH AND APPLICATIONS INFORMATION CENTER was founded to strengthen communication among researchers and the individuals and organizations concerned with mitigating natural disasters. The center is funded by the National Science Foundation, Federal Emergency Management Agency, National Weather Service, U.S. Geological Survey, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Department of Transportation, National Aeronautics and Space Administration, the Institute for Business and Home Safety, and the Public Entity Risk Institute. Please send information of potential interest to the center or the readers of this newsletter to the address below. The deadline for the next *Observer* is July 20, 1999.

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